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A Model Policy for the City of New Orleans to Protect Historic Properties from Demolition After Flooding Disasters

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Executive Summary

New Orleans' rehabilitation efforts from Hurricane Katrina continue to progress slowly but surely. Hurricane Katrina's aftermath resulted in a domino effect of demolition of historic structures throughout the city. This post-disaster policy addresses the intricate and divergent complexity of local, state, federal and preservation organization and volunteer struggles to recover the city's historic resources. Preservation professionals and volunteers are determined to maintain the city's historic fabric. The complexity of the salvage of New Orleans' historic resources from demolition is addressed in public policy which suggests alternatives to the demolition of structures affected by severe flooding. The public policy illustrates the ramifications of Section 106 reviews and of how the procedures should have been properly implemented. The policy analysis shows the restoration of the historic fabric through un-deteriorating efforts and enforcing alternative solutions by planners and government officials.

SECTION 1: INTRODUCTION

After Hurricane Katrina in 2008, the City of New Orleans had 1500 demolitions and 90 unauthorized demolitions.[1] Today, the city continues to demolish structures on a monthly basis. According to the Preservation Resource Center website, May 19, 2015, New Orleans has at least 20 properties filed for demolition on a daily. As seen in the photograph below demolition is a heated debate in this city. The citizens of New Orleans are taking action to advocate for the prevention of deteriorating historic structures throughout the city; property owners continue to post signs on billboards and buildings to stop demolition as seen in Figure 1 below.

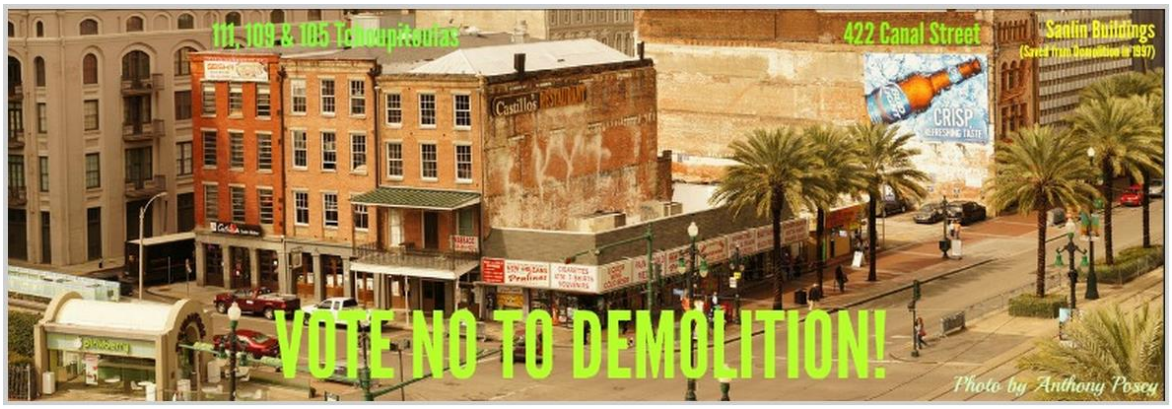

Figure 1: Saying no to demolition

Demolitions post-Katrina have been authorized and unauthorized. According to the Urban Planning Journal, demolitions have been simultaneously chosen based on the following three features: the structures over fifty years old were deteriorating before Hurricane Katrina, the historic structures fifty years and older were in favorable condition prior to the coastal flooding from Katrina, and historic properties have not reached fifty years of age but withstood the damage of the hurricane. The majority of demolished buildings were 19th and 20th century housing units. The last buildings being demolished

[1] "The Unbuilding of Historic Neighboorhoods in Post-Katrina New Orleans,"267.

were historic buildings built before the 19th century and churches. The city saw fit to issue demolition and unauthorized permits left and right. The tear down process continues to increase even after the 2005 storm. This has caused discrepancies between the local government, preservationist, and the public triggering the following five scenarios[2]:

- Overwhelming the city and its people with the high percentage of demolishing structures
- Public confusion of the distributing of permits
- Not fully comprehending the policies and procedures necessary, in order to issue demolition permits and find alternative rehabilitation solutions
- Miscommunication errors amongst city officials and preservationist
- The public not trusting the city and state officials

There are active guidelines for new development, additions and demolitions created by the Historic District Landmarks Commission and the Unified New Orleans plan touches briefly on demolition. With publications and resources available to the City of New Orleans, it is still unbelievable that at least 20 structures are getting demolished daily.

New Orleans is rebuilding steadily and slowly from the destruction of Hurricane Katrina. The 2005 Hurricane was one of the deadliest storm in history. Today, there is still plenty of work to help restore the city. The city still needs financial assistance and it needs to be distributed properly, in order to help the city rebuild as a whole, including historic buildings. Currently, 100,000 people left the city to find a new home.[3] There are miscommunication issues amongst the city, preservation professionals and the public; therefore, it has been difficult for the city to bounce back efficiently.[4] Having to relocate to a different city can be a devastating experience.[5] Many who live in New Orleans pre-second World War II districts such as Jackson Barracks, abandoned the neighborhood.

[2] Ibid., 267.
[3] Nossiter, 2007
[4] Hirsch and Levert 2009
[5] Tuan, 2007

These historic neighborhoods where know for public gatherings such as celebrations, jazz, and blues marching bands. During the 1920's the City of New Orleans built mom and pop stores. In addition, the city had snowball stands, corn stands and meat markets on every corner. The city was filled with history and people. The built environment in the 19th century was comprised of the Spanish, French and American heritage.[6]

The city's buildings were constructed close to the sidewalks with hardly any room for pedestrians. The majority of structures in the 19th century had Victorian and Greek Revival architectural features. Since, 1718 and continuing past the 19th century, New Orleans dealt with being a city below sea level. Before Hurricane Katrina, New Orleans citizens have started to relocate. 1960 Census data stated that the City of New Orleans population was 627, 525.[7] Today, the population is less than half of the 1960's census data. The percent of unoccupied buildings "increased from 6% in 1960 to 15% in 2004 to 34% in 2008."[8] New Orleans continues to be one of the top cities for locals relocating to other cities. Professionals outside of New Orleans debate if this is a city worth rebuilding.[9]

Prior to Hurricane Katrina, New Orleans had already a large index of unoccupied structures. After hundreds of demolitions have occurred,1,500 structures had unauthorized demolitions ranging from Uptown to Bywater without Section 106 review.[10] The first building to be torn down was within a few weeks after Hurricane Katrina, a 102 year old music school, once known as Naval Brigadge Hall.[11] Just before the demolition of this building, Mayor Nagin temporarily expelled the Historic Districts Landmarks Commissions authority

[6] Sublette, 2008
[7] Russell 2008
[8] Ibid.
[9] Collison, 2008
[10] Cohen, 2008
[11] Foster 2005

regarding demoliton.[12] Immediately following this suspension, an advocating organization was created known as Save Our Neighborhoods. Preservationist debated that the city's demolition list was imprecise, since not all buildings demolished were seen on the list.[13]

The strength of Katrina's flood currents demolished 125,000 structures in the New Orleans Parish (county). Three years after the 125,000 demolished structures, the City of New Orleans had to claim bankruptcy. In March 2008, it was announced that the City viewed its built environment as "the extent of blighted buildings in the city presented an enormous challenge to full recovery, particularly, but not exclusively, in neighborhoods that experienced severe flooding."[14] It was unfortunate that the first time home owners heard of their buildings being demolished when they came home to find their buildings no longer standing.[15] The demolition domino effect started in the three pre-historic World War II neighborhoods encompassing the three categories: the first neighborhoods consisted of Vieux Carré, French Quarter, Marginy, Bywater, Lower Ninth ward, CBD/Warehouse, Lower Garden, and Uptown historic districts. The second neighborhoods known as the second-line neighborhoods consisted of: Central City, Mid-city, Broadmoor, Gert Town, Hollygrove, and Upper Carrollton.[16] The third category of neighborhoods consisted of the 20th century buildings located north of the city closer to Lake Pontchartrain, consisting of Lakeview, Gentilly, and New Orleans East.

The policy analysis is a guideline for state and local officials and preservation organizations to learn how to work together and take the necessary procedures to find

[12] Ibid.
[13] Heath, 2007
[14] Metropolitan Policy Program at Brookings and the Greater New Orleans Community Data Center (GNOCDC), 2008).
[15] Krupa and Lolis, 2007; Squandered Heritage, 2008
[16] Campenalla, 2008

alternative solutions other than demolition. The report will help city officials understand how to go about following the correct procedures and whom to contact, in case of lacking knowledge when it comes to following the correct demolition procedures. This guide is helpful to achieve excellent rehabilitation and disasters recovery procedures and professionals who are looking to strengthen the procedures that will be implemented by applying environmental practices as one of the rehabilitations methods, rather than demolition, which can be a headache, especially when adapting to climate change. Therefore, preservation professionals must choose and decide which practices are best for which historic structures.

SECTION 2: LITERATURE REVIEW

2.1 Introduction

New Orleans is an authentic city with southern charm, history, authentic cuisine and music. New Orleans has a lot of historic properties and commercial buildings that were affected by severe coastal flooding from Hurricane Katrina. The literature review shows how governmental officials, preservation organizations, planners and volunteers work together to protect the city's historic resources. This policy research discusses many themes such as rehabilitation, environmental sustainability practices, the gap between preservation and political system in New Orleans, and the failures of the levees. This research also addresses alternative rehabilitation and environmental sustainability methods rather than demolishing historic properties. During Hurricane Katrina, many inhabitants had to evacuate their homes, even those residing in historic structures until it was safe to return.

The research shows preservation and volunteer organizations fighting to save the City's historic resources, which are threatened with demolition in neighborhoods such as the Jackson Barracks and Holy Cross historic districts. The policy research aids government officials and policy writers to implement future ordinance models and preservation statutes addressing only historic neighborhoods affected with demolition. The policy incorporates historic preservation law into the restoration and rehabilitation methods. The historic architecture and ambiance form the community of New Orleans. If the city continues to tear down the historic architecture, it is also deteriorating the community. The historic architecture is a part of New Orleans, so if it keeps being demolished, it is possible that the residents will stop returning home. The research discusses the importance of having a system that also addresses historic properties when addressing the safety of the City during an emergency as well as what this system should encompass.

Mark Twain once stated that New Orleans was one of the most unique cities in the United States along with Boston and San Francisco.[17] New Orleans is one of the most touristic cities, and its geography is influenced by diverse cultural backgrounds, ethnicities, cuisines and architectural styles.

A geographer, Pierce Lewis, once stated that New Orleans was a "wonderful city" located in an "impossible site," due to its construction along the banks of the Mississippi river.[18] Due to the damage caused by Hurricane Katrina, New Orleans now is often viewed as a "city underwater "that will continue to deteriorate due to rising ocean levels and global changes in climate patterns. Human life, as well as the variety of cultures associated with it, is encompassed within the daily life of the city and the city's historic, and diverse

[17] *New Orleans.* Amanda Pollak, Stephen Ives, and Jenny Carchman, producers; Stephen Ives, director; Michelle Ferrari, writer. The American Experience, PBS, color, 120 minutes, 2007.
[18] Pierce F. Lewis, 1-5.

architecture is a testament to this. Oliver Houck, an environmental scholar, stated that Southwestern Louisiana can be described in two words, "total uncertainty" about the future of New Orleans. Even though there is total uncertainty as to what will become of the City of New Orleans and its historic resources, people return to New Orleans after disasters, most notably Hurricane Katrina, because it is their home and only in New Orleans one can find a mixture of different ethnicities, in addition to being a joyful city.[19]

> That's true; you see here a mingling of all races. Not a country in America or Europe but has sent us some representatives. New Orleans is patch work of peoples.
>
> – M. Mazureau, interviewed by Alexis de Tocqueville, 1832.

New Orleans is the "model" of the first metropolitan city in the United States. Originally founded on the principal of cross-culturalism, New Orleans continues to expand its diverse ethnic and rich cultural history to this day. Ernest von Hesse-Wartegg, an 18th century Austrian writer, found that the following Spanish, French, German and Creole ethnic groups settled in New Orleans during the mid-eighteen hundreds:

> What a life in these streets! What a mingling of peoples! Americans and Brazilians, West Indians, Spanish and French; Germans, Creoles, quadroons, mulatos, Chinese and Negroes surge past us… This manifold population includes some 70,000 French and creoles, 30,000 Germans, 60,000 Negropes and mulattoes, and 10,000 Mexicans, Spanish and Italians. Therefore, the Anglo-Americans cannot number more than 80,000 to 90,000…Each nationality moves in its own circle and mingles little with the others. Each has its [own] daily pres….[20]

Due to the high ethnic diversity and cross-culturalism, New Orleans became a city entrenched in its society by distinguishing itself in aura, southern charm, music,

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[19] As quoted by Joel K. Bourne Jr., "The Perils of New Orleans," National Geographic 212, No. 2 (August 2007): 61.

[20] Ernest von Hesse-Wartegg, *Travels on the Lower Mississippi,* 1879-1880*: A Memoir by Ernst von Hesse-Wartegg,* ed. And trans. Fredric Trautmann *(Columbia and London, 1990),* 161.

architectural styles and features, and cuisine, all of which are noted in Frederick Law Olmstead's memoirs as he traveled among the slave states in 1853-1854:

> I doubt if there is a cut in the world, where the resident population has been so divided in its origin, or where there is such a variety in the tastes, habits, manners, and moral codes of the citizens. Although this injuries civic enterprise….it [nurtures] individual enterprise, taste, genius, and conscience; so that nowhere are the higher qualities of man – as displayed in generosity, hospitality, benevolence and courage – better developed, or the lower qualities, likening him to a beast, less interfered with by law or the action of public opinion.[21]

For these reasons there are available resources for preservation professionals, who are willing to work with citizens to continue the southern charm by maintaining its historic structures, essence and the cross-cultural qualities that New Orleans offers.

2.2 Actors

New Orleans is continuing to recover slowly and steadily from Hurricane Katrina, which hit landfall in 2005 and led to unprecedented destruction of historic landmarks within the city. After Katrina, New Orleans demolished several historic properties in the local historic districts. Preservation organizations, as well as federal, state and local governments, have worked together to resolve demolition issues and promote the rehabilitation and rebuilding processes throughout the districts.

2.2.1 New Orleans City Council

The New Orleans City Council immerses itself with demolition of historic properties and auctioning properties. The City Council determines whether a structure will be torn down or revitalized. In the decision making process, the city council advises the

[21] Frederick Law Olmstead, A Journey in the Seaborn Slave States, With Remarks on their Economy (New York, NY, 1856) 593-94.

public to communicate their pros and cons, especially the preservationists, developers and owners. It is important for preservationists to mention the historic property being a cultural landmark, how the building continues to maintain its cultural aura, why it is it important to the City of New Orleans, and was the structure present throughout historically important events. The New Orleans City council maintains an Economic Development Projects Committee, Neighborhood Conservation District Advisory Committee, and Community Development Committee. All three committees are involved in the public hearing discussions of teardowns and demolition by neglect.

2.2.2 Louisiana Office of Cultural Development – Division of Historic Preservation

Louisiana's Office of Cultural Development is the state's Historic Preservation Office. The Louisiana's Office of Cultural Development strives to keep up the character defining features of each historic neighborhood. The professional staff of the State's Preservation Office confirms that each activity is sustained for future generations consisting of cultural, educational, recreational, aesthetics, social, and environmental functions. The state office continues to engage the historic district communities to preserve and maintain the historic fabric and to enhance the environment and culture of the area. By developing the historic fabric, the Louisiana Office of Cultural Development believes the organization enhances the vitality of the cultural community. In addition to preserving historic properties, the State Preservation Office focuses on architectural landmarks that helped define the customs and culture of the State of Louisiana. The State Preservation Office assists property owners by filling out national register nominations, tax credits and supports the main street programs revitalize their historic districts.

2.2.3 The Executive Branch

The Office of Defense and Civilian Mobilization was set up by President John F. Kennedy. Later, civilian services were transferred to the Department of Defense. During the Kennedy administration, the Department of Defense chose the Office of Defense and Civilian Mobilization to oversee emergency disaster warnings and inform the public and governmental officials of potential disaster situations. When President Kennedy shifted the task of accumulating food and medical supplies to the department of Agriculture and the Health, Education and Welfare, the Office of Defense and Civilian Mobilization transitioned into the Office of Emergency Planning (OEP).

President Nixon transferred governmental disaster relief services from the White House to the Department of Housing and Urban Development (HUD). Below HUD the Federal Disaster Assistance Administration (FDAA) was established to replace OEP. That same year, the General Services Administration (GSA) was given the assignment to oversee all government functions pertaining to nuclear attacks and stockpiling of nuclear weapons. President Nixon replaced the Office of Civil Defense with the Defense Civil Preparedness Agency, located within the Department of Defense.

In 1977, the federal disaster management's methodology was not acceptable to any of the state governors. The Governors published an article stating: "emergency preparedness and response functions were fragmented at the state and federal levels."[22] The article pointed out the need for a more extensive plan in emergency management. They recommended that the plan consist of an all-inclusive approach to recovery, response, mitigation and long-term disaster relief policies. During the reign of President Carter, the governors' recommendations were implemented.

[22] Federal Emergency Management Agency (FEMA), "About the Agency." http://www.fema.gov/about-agency

President Carter delegated emergency management duties to the Federal Emergency Management Agency (FEMA), which incorporated the Federal Insurance Administration, the National Fire Prevention and Control Administration, the National Weather Service Community Preparedness Program, the Federal Preparedness Agency of the General Services Administration and HUD. Under the direction of President Carter, FEMA was responsible for implementing all civilian administrative responsibilities determined by the Department of the Defense Civil Preparedness Agency.

In 1992, the Federal Response Plan (FRP) was developed as a preparedness protocol for the States to use when a natural disaster was imminent. . This plan was implemented when Hurricane Andrew stuck Florida as a category 4 hurricane, and struck Louisiana as category three.. It caused twenty-three deaths, and a total of $26.5 billion in damaged properties and real estate throughout Florida and Louisiana. In the 1990's, many locals throughout the Gulf States questioned FEMA's disaster relief methods. Therefore, President Bush implemented a task force, not including FEMA, to audit disaster relief efforts. The task force was led by the Secretary of Transportation Andrew Card Junior. Congress addressed its concerns of FEMA's inadequate response efforts and notified the White House of the emergency management progress. Upon this notion, President Bill Clinton replaced FEMA's executive director with James L. Witt, who was the first emergency director with disaster management experience. James L. Witt began to change FEMA for the better by addressing disaster relief and recovery efforts, refocusing the objectives of preparedness and mitigation by staff members.

The Cold War ushered in a new era of recovery and mitigation preparations. The turmoil, resulting from the aftermath of the Cold War, allowed Director Witt to

address any pressing emergency relief efforts, which helped refocus the mission statement of FEMA. The end of the Cold War allowed Director Witt to redirect FEMA's assets and resources from civil defense efforts to disaster relief and recovery efforts only.

In 1996, President Clinton introduced FEMA to the cabinet. During the Clinton administration, the Congressional Research Service (CRS) said that FEMA progressed efficiently and effectively in relief and recovery services. CRS announced, "rather than suffering constant criticism from the media and political leaders, the agency was cited as a source of best practices in agency transformation in one study."[23] Even though FEMA had improved greatly, the organization continued reevaluate its programs after the Clinton administration.

FEMA was administered by Joe Allbaugh, Presidents Bush's former campaign director. President Bush's tax cuts pulled the United Sates economy out the recession; however, budget cuts affected FEMA. As a result, Mr. Allbaugh decided to cut FEMA's spending and budget.. Mr. Allbaugh restructured the organization, resulting in a change of objective and mission statement; it was the end of Director Witt's successful emergency management efforts. Mr. Allnbaugh claimed that the organization needed refocusing since it was not in line with President Bush's goals for the United States economy and tax cuts.

In 2003, after 9/11, President Bush established the Department of Homeland Security. FEMA no longer was a self-contained agency; instead, the organization became a department within the Department of Homeland Security. FEMA's importance plummeted and staff members found positions elsewhere. During this transition in the executive branch, Michael Brown took over Mr. Allaugh's position.

[23] Ibid.

In the wake of Hurricane Katrina, the Executive Branch and President Bush investigated the recovery scenario and the mistakes made by the White House and Emergency Management professionals. In 2005, Robert Paulison became FEMA's Director, a former Miami fire chief. Following the aftermath of Hurricane Katrina, Mr. Paulison created new positions, signed $4 billion dollars of recovery contacts with engineering firms, implemented satellite tracking devices, and notified the U.S. military of policies and procedures to implement during a natural disaster. Today, FEMA has adequate funding, methods to distribute aid to more than a hundred million refugees, and has access the Department of Defenses' alternative supplies, during a disaster. FEMA has tripled its disaster relief efforts to address the housing situation and is now more effective after relieving the homes from flooding.

2.2.4 FEMA, Federal, Local and State Governments

The Federal Emergency Management services were inaugurated prior to the Great Depression, prior to Herbert Hoover's presidency (1929-1933). In January 1932, the Hoover administration created the Reconstruction Finance Corporation (RFC), and the Emergency Relief Act was passed. Encyclopedia Britannica defines the Reconstruction Finance Corporation as a "U.S. government agency established by Congress on January 22, 1932, to provide financial aid to railroads, financial institutions, and business corporations."[24] The Emergency Relief Act extended its capacity to encompass agriculture and financial propositions for state and local governments' disaster management activities.

During the New Deal years, the RFC contributed more to disaster recovery activities. The RFC made financial donations to war plants and loan paybacks to international authorities. Initially, the RFC was designated as a self-reliant entity and non-

[24] "(RFC) United States Government Agency" http://www.britannica.com/EBchecked/topic/493753/RFC

bureaucratic organization. The RFC played an important role in the 1948 political arena. The agency became one of the major sources for recovery operations. The RFC continued to distribute large amounts of capital, which eventually led to its financial decline and bankruptcy. The aftermath of the RFC resulted in President Eisenhower's restraint on political associations. In 1953, the RFC Liquidation Act abolished the RFC agency, and its remaining activities were distributed to other governmental agencies.[25]

Located within the Department of Homeland Security, the Federal Emergency Management Agency's (FEMA) objective was to correspond with the federal government's efforts to prioritize current natural and ***(spurious?)*** disasters. FEMA's purpose is to "provide both immediate and long-term assistance to local and state governments as well as individuals."[26] During the 1930's, the restoration associations were given full authority to distribute the reconstruction recovery loans for public housing facilities affected by natural disasters. When cities and housing units experienced an increase in water levels, the National Flood Control Act was approved in 1936.

FEMA's early mission functions can be traced to the Bureau of Public Roads. In the early 1900's, FEMA became the forerunner for today's Federal Highway Administration department. During 1934, FEMA received full jurisdiction to distribute funds for infrastructure proposals for natural disaster relief efforts, and the Flood Control Act of 1946 entitled Army Corps of Engineers to oversee all waterway functions to reduce the flood levels. [27]

For centuries, United States policy makers identified the need for a decision making policy system run by the federal government to provide assistance to those affected by

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[25] Ibid,
[26] "Federal Emergency Management Agency (FEMA)". http://www.allgov.com/departments/department-of-homeland-security/federal-emergency-management-agency-fema?agencyid=7345
[27] "Disaster Relief in America a Brief History of FEMA." http://libpress.colorado.edu/?p=2497

natural disasters. FEMA considered "disaster" and "manmade disaster" as interchangeable, therefore controversies have arisen among preservation professionals and FEMA; more is discussed in heading 2.5 Consensus and Controversy. The controversies have resulted in slow recovery of coastal cities in the Gulf Coast and insufficient assistance for preventing harm or loss of life.

The first natural disaster took place in 1803, the year of numerous fire attacks throughout Portsmouth, New Hampshire. The federal government approved the Congressional Act of 1803, the first legal document passed by the United States Congress. During the 1960's and 70's public awareness levels increased. Once the Congressional Act was passed, the federal government's focused on natural disaster response. After Portsmouth in 1803, the 19th century experienced numerous natural disasters: great fires in New York and Chicago, the hurricane in Galveston, Texas in 1900, and the San Francisco earthquake of 1906. Therefore, the federal government insisted the United States economy needed reconstructing. The domino effect continued into the middle of the 20th century. Slowly the emergency management agencies provided financial compensation to victims who suffered, and recovery equipment was sent for restoration of damaged infrastructure and housing amenities. Due to the natural disasters, Portsmouth promoted *ad hoc* legislation supporting emergency management agencies. Over 100 federal agencies played a role in the recovery of the natural disasters from the domino effect.[28]

The Disaster Relief Act of 1974 gave the president the right to declare evacuation of the endangered state and established "the process for presidential declarations."[29] In 1979 President Jimmy Carter signed a contract that helped Congress unite several agencies to

[28] "Federal Emergency Management (FEMA)" http://www.allgov.com/departments/department-of-homeland-security/federal-emergency-management-agency-fema?agencyid=7345
[29] "Disaster Relief." http://congress.indiana.edu/disaster-relief

become the new Federal Emergency Management Agency known as FEMA.[30] FEMA already incorporated disaster associations encompassing the Federal Insurance Administration which led the federal response during Hurricanes Carla (1962), Betsy (1965), Camille (1969), Agnes (1972) and the Alaskan (1964), San Francisco 1971 and San Fernando (1971) earthquakes. The National Prevention and Control Administration, National Weather Service Community Preparedness Program and the Federal Disaster Assistance Administration primarily focused on civil defense.[31] As soon as the president declared a natural disaster, then federal aid could be distributed. During the 18th and 19th centuries, FEMA's mission and objectives were tested by various man-made, natural and humanitarian disasters. These trials helped FEMA strengthen their recovery response efforts and engage the community, as can be seen in the contamination of Love Canal in upstate New York, the Cuban refugee crisis in 1980, the Loma Prieta Earthquake in 1989, and Hurricane Andrew in 1992.[32] Despite FEMA's advancements, disaster related enterprises continued to remain fractured.

The American Red Cross distributed aid in response to the 1960's hurricanes as mentioned in the above paragraph, and the Housing and Home Finance Administrator (HHFA) oversaw all housing federal assistance endeavors. President Eisenhower shifted the direction of federal management of disasters to the Office of Defense and Civilian Mobilization (ODCM). The ODCM was instituted by President Eisenhower, and he appointed a director, deputy director and three assistant directors. This transition was a stepping stone in the Executive Branch emergency management structure.[33]

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[30] Ibid.
[31] "Origins of U.S. Management" http://online.annamaria.edu/mpa/resource/emergency-management-history
[32] Ibid.
[33] "Federal Emergency Management (FEMA)" http://www.allgov.com/departments/department-of-homeland-security/federal-emergency-management-agency-fema?agencyid=7345

2.2.5 Historic District Landmarks Commission

The New Orleans Historic District Landmarks Commission (NO HDLC) website states that the following;

> It is the City's regulatory agency for local Historic District Landmarks Commissions outside of the Vieux Carre. Established in 1976, this agency provides the staff and office space for the two Commissions, the New Orleans Historic District Landmarks Commission and the Central Business District Historic District Landmarks Commission. The two historic districts safeguard the heritage of the City by preserving and regulating historic landmarks and historic districts which reflect elements of its cultural, social, economic, political and architectural history. They preserve and enhance the quality of neighborhoods, strengthening the City's economic base, stimulating the tourist industry improving property values, fostering economic development, and encouraging growth.[34]

The HDLC was established in 1976 and the Central Business District Historic Landmarks Commission (CBD HDLC) in 1978.[35] Today, the HDLC is comprised of the New Orleans Historic District Landmarks Commission (NO HDLC) and the Central Business District Historic Landmarks Commission (CBD HDLC). In addition, the HDLC manages all preservation, restoration and demolition functions within the City of New Orleans local historic districts with the exception of the Vieux Carre historic district. The City of New Orleans legislative policies, established "the legal framework for the Commissions, including Commission composition, term limits, definitions, powers, processes and procedures."[36] Some historic landmarks and buildings that lie outside the district limits are safeguarded by an individual association. The HDLC claimed that demolishing a property within the local historic district or landmark site would change the feel of the district and alter the character defining features of the neighborhood.[37] Due to the lack of resources, the HDLC rarely acknowledged the approval of demolished buildings post Katrina.

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[34] "Historic District Landmarks Commission." http://www.nola.gov/hdlc/
[35] "Mission and Governing Policies." http://www.nola.gov/hdlc/hdlc-mission-ordinances/
[36] City of New Orleans HDLC – Guidelines for New Construction, Additions and Demolition 12-23.
[37] Ibid.

The review process of the HDLC is comprised of the following precedents[38]

1. The historic or architectural significance of the building or structure as designated by its "rating";
2. The importance of the building or structure to the tout ensemble of the area;
3. The alternatives to demolition that have been evaluated and explored by the applicant;
4. The special character and aesthetic interest that the building or structure adds to the local Historic District or Landmark site;
5. The difficulty or impossibility of reproducing such a building or structure because of its design, texture, material or detail;
6. The condition of the building or structure;
7. The future utilization of the site;
8. The proposed mitigation measures such as, but not limited to, fencing, landscaping and maintenance contracts.

If more than one property or area of the building needs to undergo the demolition process, then the review applications must be filed and undergo the approval process. Under such circumstances, a site plan must be included with the original application. If the building inspector provides documentation representing the landmark or property being an endangerment to the surrounding area or if the buildings or landmarks are on the verge of collapsing, then the building will be demolished. The Executive Director is the only professional who can approve the demolition of historic properties that are less than a 1,000 square feet.[39] If the demolition applicants do not meet the specifications for demolition as required, then the individuals will be able to attend a public hearing. During the thirty days grace review period, the public is able to make suggestions and the board has additional time to review the demolition applications. The grace period allows the review board additional time to thoroughly analyze the application. If the applicant is granted demolition, the review board will issue a Certificate of Appropriateness (Cofa). Once the Cofa is issued,

[38] Ibid.
[39] City of New Orleans HDLC – Guidelines for New Construction, Additions and Demolition 12-23

the applicant will need to obtain all remaining documents stated by the review board from the correct agencies prior to demolition.[40]

2.2.6 Advisory Council on Historic Preservation

The Advisory Council on Historic Preservation (ACHP) is a federal organization focusing on preservation advocacy. Each year, the ACHP has an influential role advocating for historic preservation and Section 106 review. The ACHP's mission is to advocate for the protection of historic resources through "preservation, enhancement, and sustainable use of our nation's diverse historic resources, and it advises the President and Congress on national historic preservation policy."[41] The Office of Federal Agency Programs (OFAP) program office helps the Advisory Council to evaluate Section 106 cases. The OFAP addresses two areas to determine the policies and activities needing improvement in the given area. The ACHP members' policy and procedure team can be obtained in the chart below listed in Appendix A. These policy professionals help historic property owners and preservation professionals identify policy related questions and inquiries. The ACHP provides two educational training programs for the public on the value of the Section 106 review process. During the 106 essential training courses, the public will learn the benefits of the process, the current standards, the policies, and best practices. The advanced course is geared towards the educational needs of federal, state, local and tribal agencies. The first day training of the advanced course is similar to that of the 106 essentials training course. The second day is focused on group exercises to meet the needs of the present organizations. The ACHP hosts educational programs for the International Center for the Study of the Preservation and Restoration of Cultural Property (ICCROM). The ICCROM

[40] Ibid.
[41] Ibid.

was established in 1959.[42] The ICCROM is a self-reliant organization consisting of 101 member states and numerous associations. Currently, the ICCROM provides training and research classes at the Ospizio di San Michele in Rome. The Ospizio di San Michele is an institution where conservation professionals can gather and discuss preservation matters throughout the 101 member states. ICCROM concentrates on the "scientific and cultural" concerns of cultural heritage protection.[43] The 1999 National Historic Preservation act was modified on May 1970, as shown in 84 statue 204, to grant United States heritage cultural conservation members enrollment with ICCROM by the ACHP. On January 20, 1971 the membership requests were approved. Since the enrollment, both the ICCCROM and ACHP have worked together to bring the 101 cultural heritage member states' professionals together and discuss the current events in their home countries.

The ACHP continuously increases the engagement of youths and historic preservation associations. Due to the lack of community involvement and public awareness, preservation professionals agree that historic preservation awareness is challenging. Therefore, the ACHP supports youths to engage in their communities, schools to involve their students in preservation activities, and preservation organizations to produce community service projects to increase community and youth involvement.

Working with preservation groups with a community service component, the ACHP established a website feature with Learn and Save America and Preserve America's request. The website feature engages the public and defines how to construct partnerships in school districts. Preserve America mission is "to create greater appreciation and support for

[42] "International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM)." http://www.achp.gov/iccrom.html
[43] Ibid.

historic preservation by actively involving youth in historic preservation activities."[44] The ACHP, Learn and Save America, and Preserve America work together to show the public how to establish partnerships using online resources.

2.3 Resources

There are many organizations and publications for the purpose of helping building owners save historic properties from demolitions. The resources available to the City of New Orleans such as preservation organizations, volunteer organizations, and non-profits advocate for the saving of historic structures. These organizations believe that instead of demolitions there should be alterative rehabilitation procedures.

2.3.1 Recovery and Reconstruction Ordinance

The recovery and reconstruction ordinance written by the American Planning Association is a model located under the Planning Advisory Service Report. The recover and reconstruction model is an emergency management plan that is to be enabled by the local governments. The recovery and reconstruction ordinance has a limited section focusing on historic properties, providing a strategic plan targeting "demolition of historic buildings that represent an imminent hazard to public safety and health or being hazardous to the public right of way."[45] The focus of the ordinance is to address pre and post governmental activities after a natural disaster. The model ordinance focuses on buildings throughout the City of New Orleans not just historic neighborhoods. The Model Ordinance abides by procedures that are pertinent to non-historic structures and applies those procedures to historic buildings. Therefore, the recovery and reconstruction ordinance fails to protect historic properties efficiently and effectively.

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[44] "Youth and Historic Preservation." http://www.achp.gov/youth.html

[45] A Model Recovery and Reconstruction Ordinance (Kenneth C. Topping, American Planning Association, 1998), in SCHWAB ET AL., supra note 71, at 149–67.

2.3.2 Louisiana Landmarks Society

Louisiana Landmarks Society (LLS) has served as the leading role model in the education of preservation, architecture and history. LLS is the key player in the advocacy of the protection of historic properties throughout New Orleans. Every year LLS chooses nine historic properties to put on the New Orleans Nine endangered list. Nine buildings are selected, and LLS advocates for funding and restoration of the properties. The New Orleans Nine endangered list focuses on historical significance, importance to the City of New Orleans and architectural features. LLS's main mission is to protect historic properties from demolition for neglect or bureaucracy by the federal government.[46] LLS provides volunteer opportunities and internships for students in restoration, preservation and archival projects pertaining to the salvage of historic buildings affected by demolition for neglect. LLS administers advocacy opportunities for volunteers, and new members can get involved by joining the mailing list on the LLS website, http://www.louisianalandmarks.org/membership. In addition to advocacy opportunities, the public can join the LLS Executive Director Waltar Gallas and Board Members to attend the New Orleans City Council demolition review hearings.

LLS is an active organization, which attends city council hearings of demolition and teardowns. New Orleans city council hearings are open to the public, owners, preservation specialists and construction companies to state their appeals, arguments and discussions for the salvage or demolition of the historic property, prior to the city council's decision to teardown or salvage the property. The preservation experts, volunteers and interns continuously advocate for the opposition of demolition.

2.3.3 Volunteer Louisiana

[46] "New Orleans Nine" http://www.louisianalandmarks.org/preserve/new-orleans-nine

Volunteer Louisiana's' mission is to "build and sustain high quality programs that meet the needs of Louisiana's citizens and promote an ethic of service." [47] In 1993, Volunteer Louisiana was under the direction of the Office of the Lieutenant Governor, to bring back the southern lifestyle that continued throughout the 1990's under Governor Jay Dardenne.[48] The Office of the Lieutenant Governor, a policy-addressing entity, is the nucleus of national assistance endeavors and is the State of Louisiana's establishment for all of Louisiana's national assistance efforts. Volunteer Louisiana projects are funded through the Corporation of National and Community Service, as noted in the National and Community Service Trust Act of 1993. The organization has grant funding projects to provide educational opportunities for students advancing communal authority.

Volunteer Louisiana tracks its members through VolunteerLouisiana.gov, through which the online database informs in-state and out-of-state volunteers about civic projects throughout the state. VolunteerLouisiana.gov is the go-to database for national service assistance information and postings of organizations gathering volunteers in the event of a state emergency. The Governor's Office of Homeland Security and Emergency Preparedness nominated Volunteer Louisiana as the primary organization for "spontaneous" Volunteer Services in the event of a disaster.[49] The service events are adventurous, since the volunteer efforts range from a wide variety of projects such as saving historic properties, assisting emergency management members, overseeing environmental sustainability projects, addressing public safety, human needs, and education.[50]

2.3.4 The Lower Nine

[47] "About Volunteer Louisiana." http://www.volunteerlouisiana.gov/about/about-volunteer-louisiana/
[48] Ibid.
[49] Ibid.
[50] Ibid.

In the late 1700's, the Mississippi River flowed through what is now Metairie Road, City Park Avenue, Gentilly Boulevard and Chef Menteuer Highway, now called the Metairie and Gentilly river systems.[51] The alteration of New Orleans' topography divided it into four hydrologic units: Metairie, Gentilly, Esplanade ridges, and the natural levee systems. In addition, these four units have "pumps and outfall canals" to release the flow of water away from the four sections.[52]

The safety of the city and its historic properties relies heavily on the levee and drainage systems and the city's marshlands. During Hurricane Katrina, historic properties in the lower ninth ward were damaged due to the rise in water level, failures of the levee system, and pump and drainage problems. For example, the Holy Cross neighborhood in the lower ninth ward suffered inundation because the levees failed on the eastern portion of the Industrial Canal, unlike the other sections of the lower ninth, where the levees had better stability. Although it is impossible to be certain as to the future change in climate patterns and temperature, it is a simple matter of physics that water flows from higher to lower elevations. Structures built on a higher elevations are therefore less likely to be flooded than those at lower elevations.

The Lower Nine, inaugurated by Rick Prose, a Maine barge developer became a "follow up organization."[53] The Lower Nine was the association that helped nonprofit emergency organizations address disaster relief and recovery methods after Katrina hit landfall in Waveland, Mississippi and in St. Bernard, Plaquemines, and Orleans Parishes.

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[51] Richard Camapnella, *Bienville's Dilemma* (Lafayette: University of Louisiana, 2008), 81.
[52] Ibid.,82.
[53] "Rebuilding Homes. Restoring Services. Reviving Hope. Reaching Out" http://lowernine.org/about/

Preserve Nine is a non-profit organization that focuses on the distant future recovery of the Lower Ninth Ward in the aftermath of Hurricanes Katrina and Rita and the unstable levee system of 2005. Reestablishing the Lower Ninth Ward has been slow and steady due to current economic factors, poverty and recovery stagnation of the federal, local and state governments.

The first sign of the slow recovery was the accumulation of toxic mold within the Lower Ninth Ward.[54] FEMA, insurance and mortgage associations realized that the Lower Ninth Ward would recover at a slower rate from the impact of Hurricanes Rita and Katrina in comparison to other Gulf Coast cities and districts throughout the City of New Orleans. Rebuilding was the second stage of recovery after mold removal and gutter installations. The Lower Nine staff members trained volunteers with limited knowledge of disaster relief and recovery expertise to help reconstruct flood impaired properties.

As of today, the Lower Nine organization has reconstructed seventy-five historic properties and continuously renovated homes affected by severe flooding from Hurricanes Katrina and Rita. Only 34% of the locals had returned home by 2014.[55] In the spring of 2014 the Lower Ninth Ward received a memorandum stating "the City of New Orleans will soon begin repairing Katrina damaged road and infrastructure in your neighborhood."[56] Infrastructure and roads are slowly being repaired, yet there is still a need for rehabilitation of damaged historic buildings. The Lower Nine organization does not have the authority to make any policy decisions regarding demolition by neglect. Instead, the agency is the current leader in the Lower Ninth Ward of housing renovation and rehabilitation. The

[54] Ibid.
[55] Ibid.
[56] Ibid.

expected FEMA finalization restoration date of the Lower Ninth Ward is 2025.[57] Nine years after Hurricane Katrina, the City of New Orleans has had more restoration success in the Vieux Carre historic district, which had considerably less damage compared to that of the Lower Ninth Ward. Estimation of the Lower Ninth Ward rehabilitation and restoration projects is still in process.

2.3.5 Preservation Resource Center

The Preservation Resource Center Operation Comeback project targets the obtaining and marketing of unoccupied historic homes and homes issued for demolition. Operation Comeback was initially established in 1987 to revitalize the Lower Garden District. Currently, Operation Comeback associates itself with other revitalization neighborhood agencies and commonwealth expansion businesses throughout the City of New Orleans. Operation Comeback obtains historic homes in poor condition and revitalizes the properties to sell back on the market to new homeowners. This movement exemplifies the rejuvenation of the historic New Orleans districts. Operation Comeback's endeavors are to bring back the locals and their families, the essence of the community, and to attain new volunteers. The Operation Comeback Revolving fund and the Adopt a House program enable locals, agencies, and preservation professionals to refurbish and revitalize properties through volunteering, educating and donating.[58]

Rebuilding Together New Orleans is a program within the Preservation Center involving the citizens of Orleans Parish and incorporating volunteers and professionals to help current homeowners with needs. In 1988, the Preservation Resource Center held a

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[57] Ibid.
[58] "Operation Comeback" Preservation Resource Center of New Orleans http://www.prcno.org/programs/operationcomeback/

one-day citizen project in the Lower Garden District called Christmas in October instead of April. The Christmas project focused on the restoration and maintenance for elderly and disabled homeowners.

Hurricane Katrina refocused Rebuilding Together New Orleans's objectives. After Katrina, Rebuilding Together New Orleans concentrated on locals superseded by the natural disaster. Rebuilding Together New Orleans's mission began to around renovation and restoration efforts for flood disaster affected properties. The citizens of New Orleans started to return home after the housing establishment's revitalization efforts and the administration of a series of restoration and preservation practices in historic districts. Rebuilding Together New Orleans' primary agenda involves the urban poor, who incurred the worst impact of Hurricane Katrina's aftermath. According to Rebuilding Together New Orleans, families who return to their districts have the capabilities to sustain healthier lifestyles and better living accommodations, while improving their housing stocks and financial self-reliance.[59]

Four years after Katrina, Rebuilding Together New Orleans became the largest non-profit organization devoting time towards rehabilitation of the local historic districts and neighborhoods. The organization focuses on Broadmoor, Esplanade Ridge and Treme, Faubourg Saint Roche, Gentily, Hollygrove, Holy Cross, McClendonville and Mid-City neighborhoods in Figure 2.

[59] "Rebuilding Together." http://www.prcno.org/programs/rebuildingtogether.php

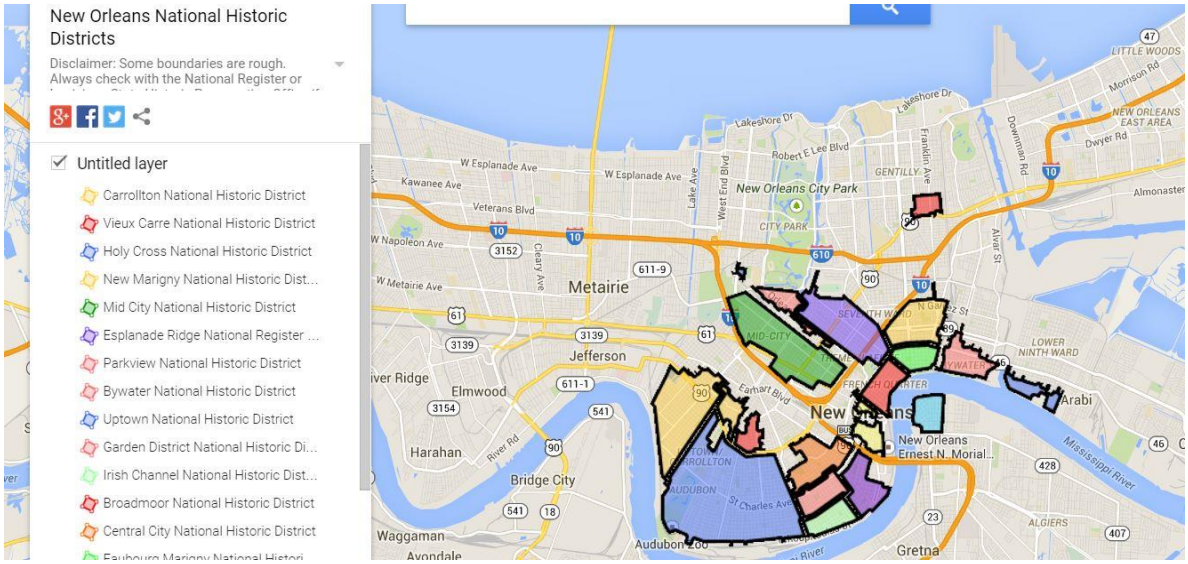

Figure 2: New Orleans Historic Districts Database from Global Green Organizations[60]

Some of the restoring historic home projects are in pre-civil war districts. French cultural influences were located at McCarty Plantation and Reynes plantation where are situated between the Mississippi River and Lake Pontchartrain. Through the seven neighborhoods, Rebuilding Together New Orleans uses salvage architectural materials and creates interior functional elements.

2.3.6 Global Green U.S.A

Global Green U.S.A is a nationwide leader advancing resilient communities and enhancing sustainable green construction. Global Green's objective is to transition cities into a sustainable cities "we green cities, schools, and affordable housing help to protect human health, improve livability, and support our planet's natural systems in an effort to stem climate change."[61] Following the aftermath of Hurricane Katrina, Global Green U.S.A has dedicated the organization to sustainable building projects in New Orleans due to the

[60] "Rebuilding Green in New Orleans," http://www.globalgreen.org/articles/global/115
[61] Helping the People, Places the Planet in Need." http://www.globalgreen.org/

insufficient response provided by the Federal Government. The Holy Cross Historic District Design Project was awarded to Mathew Berman and Andrew Kotchen of Workshop/Apd. The project was designed for "five family housing units, an 18 unit apartment building and a community center to serve the community in the lower ninth ward." [62] Global Green U.S.A claims that this design project will be a solution to the climate change in New Orleans. After the oil spill in the Gulf Coast in 2010, Global Green U.S.A has been interacting with locals, environmental specialists and preservation professionals on resilience projects. This led towards the creation of Louisiana Wetland Action Program (LWAP), which brought homeowners together to engage in the restoration and costal damage of oil spills and storms.

2.3.7 Preservation Action

Preservation Action is the nationwide nonprofit campaigning for the best preservation guidelines at the federal level. On July 13, 2013 Preservation Action aimed to save historic homes from demolition by neglect. That same month, Preservation Action advocated for tax credit redemption during the tax reform season. In July 2013, Preservation Action validated the Hardest Hit Fund project. The organization saw numerous properties affected by demolition of neglect without following the proper review procedures. The project was funded by the Federal Government. The hope for the project was all structures undergoing demolition would abide by the Section 106 review regulations

[62] "Rebuilding Green in New Orleans" http://www.globalgreen.org/articles/global/115

or an agreement would be justified to involve the State Historic Preservation Office officials. [63]

The Department of Treasury was in favor of the State of Michigan's innovative funding, bypassing Section 106 and the State Historic Preservation teardown reviews. Preservation Action claims that even though the Hard Hit Fund is a federal investment, the state is able to provide financial incentives to demolish historic properties without activating Section 106 review.[64] Preservation action enhances grassroots advocating for all historic properties undergoing demolition to properly withstand Section the 106 review process.

2.3.8 Advisory Council on Historic Preservation

The Advisory Council on Historic Preservation (ACHP) is a financially self-reliant federal entity located in Washington D.C. The ACHP supervises all Section 106 review functions. The National Historic Preservation Act demands that all federal agencies understand the effect of the organization's undertakings on historic properties, neighborhoods and landmarks. The Advisory Council influences the President and United Sates Congress decision makers, informs federal, state and tribal governments of preservation advocacy actions and demolition activities.

The Advisory Council on Historic Preservation worked diligently with FEMA, the Louisiana State Historic Preservation Office, Department of Homeland Security and the City of New Orleans to determine historic properties that need to be demolished and properties that were a hazard to public health and safety regulations. These agencies

[63] "Hardest Hit Fund Ok'd for Demolition Costs; Tax Reform threatens Historic Tax Credits; Rep. Garamendi join Caucus." http://www.preservationaction.org/hardest-hit-fund-used-for-demolition-tax-reform-threat-htc-garamendi-joins-caucus/
[64] Ibid.

obtained funds for undertakings as portrayed in the December 3, 2004 Programmatic Agreement to indulge FEMA's 36 CFR Part 800 regulations. 36 Part 800 executes Section 106 and Section 110(f) under the National Historic Preservation Act 16 United States Code §§ 470.

2.4 Consensus/Controversy

2.4.1 Susceptibility to Flooding

The City of New Orleans was constructed by using a top down approach by engineers and locals who survived hardships and trauma imposed by Hurricane Katrina, leading to the construction of the streetscapes. Once the streetscapes were completed, New Orleans took the bottom up approach in helping citizens to settle along the Mississippi River, resulting in an increase of road intersections, resources and local businesses. New Orleans is the personification of a town created in 1717 by the Company of the West. Bienville proposed the development of the City in 1718. During 1721-1722, the design of the city was planned by Le Blond de la Tour and Adrien de Pauger. The first residential community settled within the design of the 1721-1722 city plan and in 1788 was forced to relocate beyond the city limits, due to a devastating fire. In 1788, New Orleans began to expand along the Mississippi river and spread beyond the limits of the original 1721-1722 city grid. This expansion along the banks of Mississippi River was accompanied with the creation of a more urbanized area until the early 19th century.[65]

The start of the 19th century resulted in an increase in foot traffic; therefore newer businesses were constructed next to each other, in order to reduce walking distance. The first New Orleans's suburbs created were the Saint Marie local historic district and Orleans

[65] City-Data, "New Orleans History: City Data," http://www.city-data.com/us-cities/The-South/New-Orleans-History.html
Richard Camapnella, *Bienville's Dilemma* (Lafayette: University of Louisiana, 2008).

Parish in 1788. These residential districts were the first to be designed to have a balance between sense of place and an increase in metropolitan advancement. From 1805-1806 the Fabourg Marginy historic district was entrenched, and between 1806-1810 Falbourg Saint Merie became part of the urban area. Faubourg Treme was designated an urban center in 1810. The new development was an indication of future development and transportation systems that would later evolve in the City of New Orleans and its surrounding districts. 1810 marked the beginning of the separation of Faubourg Saint Merie. In addition, this was the year that "unified the extant street grids of its neighbors,"[66] marking a pivotal moment in the evolution of New Orleans as a developed urban area.

The historic homes located in the uptown district of New Orleans are at a better advantage today than all the other historic districts because the elevation of these buildings in relation to sea level is higher. Therefore, uptown is less likely to get flooded, unlike the lower ninth ward, which has a much lower elevation. New Orleans' downtown resembles that of a European community rather than an American city. The structures located downtown are based on French, Spanish, Caribbean and Creole influences.[67] In the 1800's, the Fabourg communities were settled by wealthy foreigners, and Saint Marie's historic district was inhabited by lower income plantation workers. Since the 18th century, the wealthier citizens of New Orleans continued to settle closer to uptown and the downtown district. Until today, the downtown district continues to attract former plantation workers, artists and businessmen. It took the French Quarter an additional sixty-eight years to have the economic success of that of the uptown district and to have an increase in urban development.[68]

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[66] Ibid.,156.
[67] Ibid.
[68] Ibid.

In the 19th century, the majority of housings settlement occurred in the Garden district and uptown historic districts. This is where original sugar plantations were located and subsequently divided into grids, resulting in the garden city urbanization. During the grid division, Albert James Pickett, Alabama's first historian, noted the following:

> Five miles long [and] three-fourths of a mile wide. Then commences Lafayette [present-day Garden District and the Irish channel, which together with New Orleans proper] may be considered at one vast place…After a succession of splendid mansions, farms, and other houses, the whole resembling a continued village, Bouligny [Napolean Avenue Area] and Carrolton unite with the chain of commerce. A century from this date, Orleans, like London, will [envelop] every town and hamlet for miles around, [becoming] the largest city on the continent of America and perhaps in the world. [69]

The success of the economic and housing settlement of the uptown district can be seen in the designation of the Orleans Parish. The upper section of the Orleans Parish developed six times from 1797-1874 along the Mississippi River. In its modern form this area is located between Iberville and Monticello Streets. The lower section of the Orleans Parish continued to develop slowly for the last 200 years from Saint Bernard Parish to the Jackson Barracks historical district.[70] Today the city is divided into municipal and historic districts, parishes and wards.

In the beginning of the 18th century, New Orleans was occupied by the Anglo-American Indians and the Creoles. In 1836 New Orleans began to be settled by different ethnicities, resulting in the city being segregated into three parcels. This system ended in 1852, and the use of the terminology "municipality district" was reinforced[71]. This was an important year in history due to the occupation of the Lafayette district, now known as the Lafayette Square Historic District located in CDB (Central Business District), by Jefferson Parish. In the 18th century, the Lafayette District was part of the fourth Municipal district

[69] Pickett James Albert, "Eight Days in New Orleans in February, 1847," (Montgomery, AL, 1847), 17-18.
[70] Ibid., 157.
[71] Ibid.

situated in Algeries. After the invasion of the Lafayette District by Jefferson Parish, the annexation of Algeries (now known as fifth district within the Orleans parish), Jefferson (sixth district) and Carlton (seventh district) began. Neoliberal urbanism continued to thrive among the municipality districts, helping the local citizens to obtain their real estate taxes through designated tax appraisers continuing into the twenty-first century. This system started to change when the citizens of New Orleans spoke after Hurricane Katrina by representing the institution Citizens for One Greater New Orleans. This organization hoped to change the neoliberal urbanism system in 2006 by an amendment vote.

New improvements to urbanization were made later in the twenty century. Engineers installed a new drainage system, in order to help the levee system. The drainage system was to help remove excess water and prevent any additional water from entering in the city. During Hurricane Katrina, Lake Ponchatrain flooded and the levee system failed, leading not only to a vast excess of water in the city, but to the flooding of fifteen historic districts.[72] New Orleans was better secured from natural disasters when the historic homes were raised on piers before the World War II era; however, this system was abandoned after World War II. Until this day, Hurricane Katrina continues to remind local preservationist and architects about the failures of the levee systems and the drainage and roof problems of historic structures. Local preservationists are still haunted by 2005, when the natural phenomena brought the following typologies together: "race, class, transportation, education, economics, lifestyle, cost of living, and gentrification."[73] Until this day, many preservationists complain that the topography and hydrology is not counterbalanced. The construction workers who worked on the Pitot House in the summer of 2013 mentioned that

[72] Alan Huffman, "The Unkindest Storm: Hurricane Shattered Many of the Gulf Coast's Historic Districts," *Preservation Nation*, September 16, 2005, http://www.preservationnation.org/magazine/story-of-the-week/2005/the-unkindest-storm.html
[73] Ibid., 158.

building on grade should have not have happened. Gilbert F. White, the father of floodplain management, said "floods are acts of God but flood losses are largely acts of man."[74]

21st Century New Orleans is commonly seen as the only city in the United States that is "below sea level"; this is not entirely accurate.[75] The City of New Orleans was above sea level before man-made intervention (such as lakes and reservoirs) resulted in the disruption of the water flow, resulting in erosion. Due to the rising sea levels and soil submersion, New Orleans today is found at 51% above sea level and 49% below sea level.[76] Even though the topography of New Orleans is flat, the elevation varies throughout the city. In a coastal city, elevation is a "scarce resource;" therefore the city is in need of a higher protection system to help better prepare its historic resources and structures from being heavily impacted by a disaster.[77] A man living within the Esplanade Ridge historic district on Esplanade Avenue described the aftermath of Hurricane Katrina on the city and stated: "this is a little island and five blocks away there was eight feet of water."[78] The uppermost areas that lie within the Mississippi River Deltaic Plan are situated along the Mississippi River and the bayous. In 1758, the Mississippi river overflowed, which created the natural levee system to rise higher in elevation due to the improved construction.

As the Mississippi River water level rose, so did the swamps. The swamps described by Lage du Pratz as shown in the *History of Louisiana:*

> The soils of this area are brought down and accumulated by means of the ooze which the Mississippi carries [during] its annual inundations; which begin in [early spring] and last for about three months. Those oozy or muddy lands easily produce herbs and reeds; and when the Mississippi happens to overflow the following year, these herbs and reeds intercept a part of this ooze, so that those at the

[74] Gilbert Flower White, "Human Adjustments to Floos" (Ph.D. dissertation, University of Chicago, 1942, Published 1945),2., A-6.
[75] As quoted by Katy Reckdahl, "As Endymion Returns to Mid-City….," New Orleans Times-Picayune, (February, 1, 2008), A-6.
[76] Ibid.
[77] Ibid.
[78] Ibid.

> distance from the river cannot retain so large a quantity of it, since those that grow next [to] the river have stopt the greatest part…. In this manner [,] the banks of the Mississippi River became higher than the lands about it.[79]

The abyss that developed along the river bank caused the flow of water to change directions and go to the swamp areas, instead of towards the river. This formed a natural levee system, resulting in supplying pelagic sediments that have created mud on the bottom of the ocean known as ooze. Ooze divided the hydrologic units and continued to separate the drainage basins.

In the late 17th hundreds, the Mississippi River flowed through what is now Metairie Road, City Park Avenue, Gentilly Boulevard and Chef Menteuer Highway, which are now called the Metairie and Gentilly river systems.[80] The alteration of New Orleans' topography divided it into four hydrologic units: Metairie, Gentilly, Esplanade ridges, and the natural levee systems. In addition, these four units have "pumps and outfall canals" to release the flow of water away from the four sections.[81]

The safety of the city and its historic properties relies heavily on the levee and drainage systems and the city's marshlands. During Hurricane Katrina, historic properties in the lower ninth ward were damaged due to the rise in water level, failures of the levee system, and pump and drainage problems. For example, the Holy Cross neighborhood in the lower ninth ward suffered inundation because the levees failed on the eastern portion of the Industrial Canal, unlike the other sections of the lower ninth ward, where the levees had better stability. Although it is impossible to be certain as to the future change in climate patterns and temperature, it is a simple matter of physics that the flow of water is from

[79] Le Page du Pratz, *The History of Louisiana, ed.* Joseph G. Tregle, Jr. (Baton Rouge, LA, 1976 reprint of 1758 original), 128.
[80] Richard Camapnella, *Bienville's Dilemma* (Lafayette: University of Louisiana, 2008) , 81.
[81] Ibid., 82.

higher to lower elevation. Structures built on a higher elevation are less likely to be flooded as are those at a lower elevation.

Many centuries ago, New Orleans locals received their water from street vendors or obtained the water directly from the Mississippi by a bucket. The bucket was kept in an earthen jar. First, the water was transferred into a coal filtered jar, and then the water was filtered using sediments or stones. In the 18th century, this process was known to bring the best filtered water in the city. In 1812, Major Amos Stoddard stated, "The salubrious quality of the [Mississippi River} water is attributed in part to the nitre and sulphur [and the river's] deep and rapid current…."[82] Water that was used in the household kitchens came from wells; however, in recent times there have been several issues with water levels and drainage.

Subsidence is defined as "the lowering of the elevation of a land area in relation to sea level."[83] The previous topography of New Orleans was situated above sea level. New Orleans continued to remain above sea level until the 19th century as seen in 18th century topography maps and the writings of Elisee Reclus (an 18th century geographer who visited the Gentilly and Lakeview districts): The districts far from the Mississippi are only a few centimeters above sea level, and people's homes are separated from alligator nests only by drainage pools of stagnant and always iridescent water.[84]

[82] Major Amos Stoddard, *Sketches, Historical and Descriptive of Louisiana* (Philadelphia, 1812), 164.
[83] Roger T. Saucier *Geomorphology and Wuaternary Geologic History of the Lower Mississippi Valley*, 2 vols, (Vikcksburg , Ms, 1994), 1:53.
[84] Elisee Reclus, *A Voyage to New Orleans* , eds. John Clark and Camille Martin (Thetford, VT, 2004 translation of 1855 original), 50.

By 1935, 30 percent of the urban area was below sea level.[85] By the end of the century, the 30 percent figure increased to 50 percent. The 1944 GIS data stated that the Orleans, Jefferson and Algeries Parish are 53 percent above sea level and 47 percent below sea level.[86] The 2000 GPS data shows that the Orleans, Jefferson, and Saint Bernard parish are 51 percent above sea level, and the remaining 49 percent is below sea level.[87] The local districts of Gentilly and Lakeview are currently 80 percent below sea level.

The topic of subsidence is mentioned often in New Orleans. This word was first introduced in 1970. It has been computed that the average subsidence of an urban area is ten millimeters per year.[88] It is quite difficult to the measure the level of subsidence in a coastal city; however, the major factors that play a role in calculating the subsidence are "geology soils, hydrology, well locations and water withdrawal….level locations, drainage pumping station sites…the history of drainage and settlement, application of fill and overburden, the bulk and density of buildings, and land use".[89]

Properties in the Central Business Historic District are higher in elevation than historic districts closer to the Mississippi River, such as Marginy and Bywater. The historic districts with higher elevation and "coarser soil particles and less organic matter subside at lower rates than low-lying former marshland with finer particles, higher water tables, more

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[85] " How much a City is below Sea Level?," *New Orleans Item,* April 13, 1948, 12.
[86] Percentages computed from LIDAR digital elevation models covering from 90 degrees 15' West, 29 degrees 53' North to 89 degrees 56' West, 30 degrees 03' North (roughly from Westwego to Little Woods).
[87] Ibid.
[88] Kurt D. Shinkle and Roy K. Dokka, *NOAA Technical Report 50: Rates of Vertical Displacement at Benchmarks in the Lower Mississippi River Valley and the Northern Gulf Coast*, National Oceanographic and Atmospheric Administration, July 2004.
[89] David Hart and David Zilkoski, "Mapping a Moving Target: The Use of GSI to Support Development of a Subsidence Model in the New Orleans Region," *Urban and Regional Information Association (URSIA) Proceedings*, 1994, http://libraries. maine.edu/Spatial/gisweb/spatdb/urisa/ur94049.html

organic matter, and a more recent artificial-drainage history."[90] Throughout the urban area in New Orleans, subsidence rates range from two to three millimeters annually in the higher elevated historic districts, and ten millimeters in the lower elevate districts and as a result, New Orleans topography is composed of higher ridges and bowls enclosed by brims. During Hurricane Katrina, the failure of the brims resulted in soil inundation and subsidence, leading to catastrophic damage to some of New Orleans' finest historic monuments and historic homes.

2.4.2 Flood Blockade and Ramifications

For decades, coastal cities with severe flooding designed architectural frameworks to sustain the built environment. Many coastal cities' infrastructures were built to protect against flood disasters and climate transformations. As the infrastructures and homes wear and tear, the frameworks desire yearly preservation. If these structures are not maintained, the impact against floods and natural disasters can deteriorate "due to extreme events that exceed the engineering design level."[91] The current structures will need conservation, restoration, or rehabilitation providing adequate follow-through, during climate pattern transitions. The increase in sea level menaces the coastal properties, resulting in an increase in rehabilitation and restoration costs to an environmentally challenged burghal.[92] If coastal cities are economically and financially challenged, the cities may not have the resources to protect their communities from rise of sea-levels; therefore it may be difficult to meet the National Flood Insurance Program standards.

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[90] Richard Camapnella, *Bienville's Dilemma* (Lafayette: University of Louisiana, 2008), 328.
[91] Intergovernmental Panel on Climate Change, Managing *the Risk of Extreme Events and Disasters to Advance Climate Change Adaptation* (New York: Cambridge University Press, 2012), 305.
[92] NOAA Costal Service Center, "Sea Level Rise and Coastal Flooding Impacts"

Engineering designs such as leeves or dikes help reduce the climate change impact. In other words, engineering designs, referred to as the "shoreline protection," reducing the flood levels, if seal level is above the shoreline and coastal land. Such designs are known as "soft" or "hard" engineering. Soft engineering designs applying organic components to establish living shorelines, "through beach nourishment, dune replenishment, re-vegetation, and wetlands."[93] Hard engineering includes levees, dikes banks, jetties, flood barriers, and cisterns. All of the hard engineering components are constructed to protect the coastal city from being below sea level, decrease the rise of water levels, and prohibit overflow inland. Calculating "shore-line" protection costs depends on the real estate values, land that is accessible for intercession, and the amount of the natural environment being secured.[94] It is critical that the historic-built-environment protection costs are allocated.

The words *dikes* and *leeves* can be used correspondingly. A dike is a naturally made component from the earth to rivet and alter the current from a tidal wave. A levee is an artificial bank lifted laterally, which the current of the Adam's ale oversees the movement of immense water movement.[95] Leeves incorporate a land-side sewage system allowing Adam's ale to pass from the land to the direction of the water.[96]

It has been assumed that floodplain mapping has been protected under the United States Army Corps of Engineers (USACE) certified levee system that was established in the 1920s. This assumption was made by engineers when buildings and infrastructures were

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[93] Rachel B. Isacoff, "Raised or Razed: The Challenge of Climate Adaptation and Social Equity in Historic Coastal Communities" (master's thesis, University of Pennsylvania, 2014), 33.
[94] Robert R.M Verchick and Joel D. Scherga "Protecting the Coast*" In the Law of Adaptation to Climate Change: U.S. and International Aspects*, edited by Michael B. Gerrad and Katrina Fischer Kuh, 235-266. Chicago Bar Association, 2012.
[95] Sliders, 64: and "So You Live Behind a Levee!" American Society of Civil Engineers, 2010, 8-9, http:// content.asce.org/files/pdf/SoYouLiveBehindLevee.pdf -
[96] Ibid.,10.

constructed beneath sea-level and no alternatives were designed in case coastal flooding occurred. The New Orleans levee system was designed in two parts.[97]

The first part of the levee system was for the Mississippi River Levee System (MR&T) to protect the city against "3 million cubic feet per second," a system, which was constructed under the Flood Control Act of 1928.[98] The MR&T flows from the New Orleans District to Black Hawk, the south side of Venice, east side of Baton Rouge, and Bohemia.

The second portion of the levee construction encompassed Lake Pontchartrain and the Vicinity Hurricane Protection Project (LP&V-HPP). This design was supposed to retrieve coastal flooding from structures residing between Lake Pontchartrain and the Mississippi River, and Lake Borgne levees would help protect the city against a Category three hurricane.[99]

The residents in the Lower 9th Ward and Saint Bernard Parish claim that demolishing both real estate and historic properties allowed the waves of Hurricane Katrina to surge beneath the 14 foot wall, resulting in floodwater accessing the homes of residents in the Lower Ninth Ward and Saint Bernard Parish.[100] Washington Group International Incorporated disagrees with the residents. Instead the attorney group believes that the malfunction was not in the 14 foot wall; however, floodwaters crashed against the footwall, which deteriorated the strength of the levee and the levee system collapsed.

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[97] http://www.fema.gov/media-library-data/20130726-1520-20490-4521/549_ch8.pdf, pg. 8-4- 8-5.
[98] Ibid.
[99] Ibid.
[100] Katherine Sayre, "Lower 9th Ward Flooding During Katrina Caused by Construction Near Floodwall , Engineer Says," *New Orleans Times – Picayune*, September 17, 2012, http://www.nola.com/crime/index.ssf/2012/09/lower_9th_ward_flooding_during.html

Robert Bea, a testified eye witness, encountered the construction dilemmas and debacles about the construction methods along the downriver side of the canal granting access to the underground pressure system, which enabled the foot walls to lift above the ground and allowed Katrina to go around the foot walls. U.S. District Judge Stanwood Duval Junior, heard the case with the omission of a jury and mentioned that he accepts the complexity of the case; therefore Judge Duval extended the trial to 60 days.[101] Currently, lawyers who represent residents of the Lower Ninth ward and Saint Bernard parish are reducing the amount of questions pertaining to Robert Bea prior to cross-examining Robert Beau and the defendants.

In 2012, the flood water claims have been questionable. If the breaches were an outcome of overtopping, the United States Corps of Engineers and their contractors would be liable for the damages. Due to the 1928 Flood Control Act, the United States Corps of Engineers and their contractors received amnesty from coastal flooding resulting in the malfunction of the flood-safeguarding programs. However, "the lock" was not a flood-safeguarded project, so if the court rules in favor of the project assisting the coastal flood failures, then the United States engineering corps and Washington Group International would be held accountable for any corruption throughout the Lower Ninth Ward and Saint Bernard Parish.[102] Robert Bea mentioned that based on his forensic investigations and analysis, the computations do not prove overtopping to be the outcome of coastal damage. Therefore, he dismissed the position.

The LP&V-HPP was established under the Flood Control Act of 1965 and the Water Resources Development Act of 1974. The LP&V-HPP resides in Saint Bernard,

[101] Ibid.
[102] Ibid.

Orleans Jefferson, and Saint Charles parishes located between the Mississippi River and Lake Pontchartrain. The LP&V-HPP levee system supposedly helps protect citizens from canal malfunctions. The malfunctions and remaining residues from the canals travel south from Lake Pontchartrain. The 1800 original system was designed to administer sewage to districts residing beneath sea level.[103]

Litenuant General Carl Stock disagreed with many of the New Orleans locals about the lack of insufficient funding or delay in funding causing the weak levee system during Hurricane Katrina. Litenuant General Carl Stock believed that the levees' performance was inadequate to sustain the overwhelming winds of Hurricane Katrina. The levee system design was never intended for a Category 3 Hurricane. [104] General Carl Stock becomes controversial by mentioning that the levees would not sustain the city for a level 3 Hurricane:

> "It was fully recognized by officials that we had Category Three [hurricane] level of protection," Strock said. "As projections of Category Four and Five were made, [officials] began plans to evacuate the city. We were just caught by a storm whose intensity exceeded the protection that we had in place."[105]

The United States Corps of Engineers had been building levees throughout the country since the 1800s. It is not always easy to build a levee system to withstand a category 3 or larger hurricane with limited funding. Funding for the levee system designs in New Orleans was issued by Congress and the citizens of New Orleans. In order to build a strong levee system, the United States Corps of Engineers need to take into account certain risk factors such as destruction after a natural disaster and the ramifications.[106]

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[103] Brian Handwerk, " New Orleans Levees Not Built for Worst Case Events," *National Geographic*, September 2, 2005, http://news.nationalgeographic.com/news/2005/09/0902_050902_katrina_levees.html
[104] Ibid.
[105] Ibid.
[106] Ibid.

After the malfunction of the Levee system during Hurricane Katrina, it has been noted that the levee system will undergo a re-evaluation in 2017 or 2018. As of date, it is uncertain who will undertake the project and who will be the funders. Total project costs are accumulated at $10-$20 million.[107] Climate change professionals argue that instead of studying the design of the levees and improvements, it would be best to understand the effects of subsidence, geological movements and scientifically studies pertaining to hurricane patterns.[108]

The United States Corps of Engineers brought together a team of scientist and engineers to evaluate the following failures and questions concerning the levee system designs[109]:

1. How earthen levees, floodwalls, gates and other structures should be built;
2. The standards necessary to assure those structures would survive when built into and atop Louisiana's complex, sinking geology, including increasing sea level rise caused by subsidence and global warming;
3. What kinds of hurricanes and accompanying storm surge is actually possible along the state's coastline, how often they may occur;
4. What level of overtopping could be allowed to assure that even if overtopped, the levees and floodwalls remain upright during a storm, reducing potential flooding and recovery time?

In 2005, the questions have been evaluated and kept on file. As soon as the case re-opened, Mr. Jacksoben, a Baton-Rouge engineer, focused on sustaining the lifespan of the levee system by planting grass and mat. The grass and mat would help reduce the erosion of the levees and help the city reduce the amount of coastal flooding. In addition, the 2005 former

[107] Mark Schleifstein, "New Orleans Area Hurricane Levee Designs Should be Reanalyzed by 2018, Corps of Engineer Says," *New Orleans Times – Picayune*, January 15, 2015, http://www.nola.com/environment/index.ssf/2015/01/new_orleans_area_hurricane_lev.html
[108] Ibid.
[109] Ibid.

evaluations will be re-discussed. The current designs require an increase in height, especially those adjacent to the T-walls in Saint Bernard parish, due to the "unknown risk factor," determining the unidentified risk when all other risks are present.[110] Congress and the United States Corps of Engineers have taken into consideration one of the key differences between the New Orleans levee system and Monte Carlos', the evaluation and methodology of the formation of the hurricane waves helped determine the size of the storm and waves overtopping around the levees.

2.4.3 Demolitions in the Holy Cross Historic District

The Holy Cross Historic District, adjacent to that of Jackson Barracks Historic District, has made steady restoration progress after Hurricane Katrina. The Holy Cross local district's historic atmosphere is encompassed by the shotgun houses, constructed in the mid nineteenth century. In the 1800's the Holy Cross District was an agricultural community. The Holy Cross brothers founded a boarding school for boys who worked on the Reynes Plantation. In 1918, the Industrial Canal was being built and continued to the Lower Ninth Ward, which at the time was a voting community; the Industrial Canal bisected the upper and the lower Ninth Ward. Due to this construction movement the lower ninth ward no longer had one community; instead it transitioned into two communities. The Holy Cross District was built on an elevated landscape, in comparison to that of Jackson Barracks in the Lower Ninth Ward. The Holy Cross District had the most demolitions occurring, even though the properties were built on higher ground. The demolition of historic properties did not follow the proper procedures. Locals who work as tour guides continue to take tourists to visit the Holly Cross district. Today, the locals are

[110] Ibid.

disappointed because the historic fabric is no longer the same and the blocks seem abandoned. The local historic district once had beautiful shotgun homes and the blocks have been cleaned, due to muddy lots situating next to the historic district, the historic fabric of the neighborhood deteriorated. At the end of Tupelo block, the locals see that the bushes and shrubs are residing in the walkway area reminding them of the lack of residency. It is also on Tupelo that many historic homes require restorations of roofs and porches. The maintenance of these historic districts has been a very slow process.

When the New Orleans residents see the empty lots that once had architectural and cultural significance, the residents remember the structure that was present and feel a piece of history is missing from the local historic district. The Holy Cross district families have lived in the area for generations. One of the Holy Cross residents mentioned that he sees neighbors working on the restorations of their homes:

> "Seems like you see people work a little bit, then you don't see them for a while," he said. "I guess they stop when they run out of money, and start up again when they get some more."[111]

This same resident mentions nothing about organizations or federal agencies helping to restore the historic district. The properties in the Holy Cross District continue to be abandoned. The residents help trim the weeds of the abandoned ranch houses and do maintenance to the structure. He strongly believes that the Holy Cross District will make a restoration comeback if the locals come together and restore the properties after Hurricane Katrina. He does not know the restoration status of all the properties and does not see any restoration progress. If the citizens of the Holy Cross District do not continue with the

[111] Stephanie Stokes, "Holy Cross Street a Lower 9th Ward Work in Progress," *New Orleans Times-Picayune,* August 23, 2008, http://blog.nola.com/stephaniestokes/2008/08/holy_cross_street_a_lower_9th.html

maintenance, the Holy Cross District will be a historic district with no historic fabric and architectural significance.

Leeves.org, a local Louisiana organization, focuses on addressing the former 2005 levee issues and helping families return to their homes. Leeves.org was established because community members were not satisfied with the levee failures and coastal flooding throughout the City of New Orleans. The State Historic Preservation Office and Leeves.org nominated the levee breach sites as eligible to be placed on the National Register of Historic Places. The Breach sites are situated on 17th Street and the east side of the Industrial Canal. Due to the engineering failures of the breaches, the historic district suffered severe flooding. The historic homes on Surejote Road, in the Lower Ninth Ward, were placed as an additional component for eligibility on the National Register. The State Historic Preservation Office stated that federal agencies involved in the 2005 catastrophe have to read the presented documents and conclude weather National Register status will be granted, since the Federal agencies will be using federal funds to maintain the breaches. Leeves.org increased community involvement in regard to placing properties on the National Register and homes that suffered coastal flooding. Leeves.org's hope is to have a final decision made by August 2015, and the public will continue to advocate for the salvage of the breaches, homes, and historic tax credits until June 2015. Currently, the leave breaches belong to the public and are not listed under any preservation organization. However, it is Leeves.org's hope that the levee breaches will belong to the State Historic Preservation Office. [112]

[112] Bruce Eggler, "Hurricane Katrina Levee Breach Sites Floated for National Register Nomination of Historic Places," *New Orleans Times- Picayune,* May 26,,2011, http://www.nola.com/katrina/index.ssf/2011/05/hurricane_katrina_levee_breach.html

The City of New Orleans raised $7.2 million in taxes for the "West Bank Flood Protection Program."[113] The citizens of New Orleans are questioning whether the finances will be spent for projects throughout the city or throughout the State of Louisiana. The West Bank levee authority officials raised questions pertaining to the emergency response methods; whose main question is who will oversee the emergency management response efforts? Mr. Danny Avent, a West Bank Authority offical, is unsatisfied with the Senate Bill 629. He seems to understand that the Senate Bill 629 is another way of the federal government overseeing the levees; however, Mr. Avent claims Senate Bill 629 does the following:

> "The constitution creates the levee districts as local governmental entities. Without amending the constitution to capture those two flood protection authorities and transfer them into the executive branch of government, I believe would run afoul of the constitution."[114]

Senator Rober Adley designed a legislation proposal that allows the governor authority over the levee board. During the Senate Bill discussions, the question of what is public policy was raised. Mr. Avent clarifies that public policy is a very broad subject and has no concrete definition. Mr. Avent mentions that the governor may choose what public policy means to him and act as he sees best. Susan Maclay, President of (Southeast Louisiana Flood Protection Authority) SLFPA-West branch, is skeptical that Senate Bill 629 will not give preservation professionals access to decision making in their communities and will not oversee an emergency operations were if another natural disaster was to occur. Susan Maclay concerns herself with how the ad valorem taxes will address security needs

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[113] Andrea Shaw," Legislation Stripping Levee Districts of Autonomy Raise Questions About Flood Protection Taxes, Engineer Says," *New Orleans Times – Picayune*, April 19, 2014, http://www.nola.com/politics/index.ssf/2014/04/who_will_oversee_tax_money_col.html

[114] Ibid.

and how will the Coastal Protection and Restoration Authority be prioritized on the federal agencies ladder of importance. Due to the uncertainty of the prioritization chain, Susan Maclay argues that the Senate Bill 629's focus will not be on the locals, since that is the focus of the Coastal Protection Restoration Authority, the first responders of any emergency outbreak.

2.5 Best Practices

2.5.1 Adaptive Use

The examples shown below represent best practices incorporating best mix use and housing practices. The adaptive use projects section explains the significance of partnerships, marketing and advocacy and financial incentives.

Adaptive Use Example:

School House Place and West End Apartments in Providence and Warwick, Rhode Island

Description:

Historic Buildings can become costly, and their transition to affordable housing can be challenging. Finding funding for reuse of properties and adapting these structures into apartments and a school house can be financially costly. Therefore, this project achieved its financial goals through historic tax credits, grants and advocacy. The Women's Development Corporation and the City of Warwick, Rhode Island partners found possibilities by connecting resources from both areas.

Investors and Inventors:

Women's Development Corporation and the City of Warwick, Rhode Island.

WDC is a non-profit organization established in 1979 to create, organize and flourish affordable housing units for poverty stricken communities, especially communities with a high percentage of women and children. WDC is an established leader in the revitalization and rehabilitation of historic structures for poverty stricken communities and disabilities.

Project Description:

WDC adaptive use projects consisted of the School House Place in Warwock and the West End Apartments located in Providence. The School House Place design was a reuse project of an 18th century school. The West End projects were a reuse project of 19th century structures. WDC saw all construction phases of both reuse projects. The WDC managed to obtain additional funds and professional staff to complete both projects.

Project Effectiveness:

The School House Project, an 18th century landmark, was rehabilitated into seven low income housing units. The significance of the project was that it touched the lives of others and was a new housing creation in a low income community. The West End apartments converted twenty structures into forty-seven apartment units. Such outcomes dismiss the saying that historic preservation and affordable housing are irreconcilable. Both projects have outstanding outcomes and are future role models for historic preservation and affordable housing projects.

Measures of Achievement:

The WDC's uses three objectives in rehabilitation projects consisting of contributing to an adequate, secure and low-cost environment. These three objectives have been implemented in future design projects to the meet the communities and customer's needs. By establishing partnerships within the surrounding neighborhoods, the WDC meets the needs of the community.

Best Practice Classification:

The School House and West End Apartment projects are one of the best examples in the United States for implementing adaptive use and turning a vacant property into a useful historic structure rather than demolishing the building. The following characteristics below represent why these projects became one of the best practice examples seen throughout the country:

1. Creative financial scenarios were used as a source of funding resulting in an increase in property possession.
2. Participants of the rehabilitation, design and planning stages consisted of locals and, state officials and working professionals.
3. Old and new building materials were intertwined. The old portion of the building stayed with new and modern materials similar to the consistency of the old materials.

Basic Pointers for Future Adaptive Use Projects

The following pointers show that both the City of Warwick and Providence were able to develop two unique projects for low income families. In addition, both communities gained a positive outlook on how to re-develop 18th century buildings by working efficiently and effectively with other partnerships.

1. Historic Rehabilitation is plausible for low cost units.
2. The State Historic Preservation Office, preservation consultants and funding organizations should work together to complete a favorable rehabilitation project.

2.5.2 Marketing and Advocacy

Understanding and knowledge of historic preservation are characteristics for obtaining results. Comprehending historic buildings, understating of adaptive use and using the resources provided, one achieves positive solutions. The example below represents feasible practices by advocating for preservation and marketing the salvage of historic preservation.

Project:

Guide to Historic Housing Rehabilitation in Pioneer Valley, Massachusetts

Description:

Some developers find rehabilitation intimidating and the reviews processes extensive. Therefore, the Pioneer Planning Commission took the initiative to design a straightforward read guideline for the rehabilitation of historic properties and their value to the community. The guide is mostly for homeowners to understand their historic buildings.

Investors and Inventors:

Community Development Sector of the Pioneer Valley Planning Commission (PVPC). The PVPC is comprised of forty-three communities in Hamden and Hampshire in the Connecticut River Valley County in the State of Massachusetts. The Commissions' rehabilitation projects are popular in counties ranging from 500 to 10,000 people. PVPC engages the community to help homeowners understand the Secretary of Interior Standards to be able to rehabilitate historic properties. Since the rehabilitation program is popular in towns with a population less than 10,000, the PVPC and the Massachusetts Department of

Housing and Community Development established the *Guide to Historic Housing Rehabilitation,"* which can be found at the local historic commission office.[115]

Project Description:

The miniature book answers the most pertinent questions asked by homeowners. The guide addresses the Secretary of Interior Standards Rehabilitation Regulations relevant to siding, windows, trim and exterior paints. The guide explains how to de-lead the interior trim, to do window replacement, and to use vinyl siding. The guide provides quality and quantity illustrations. Vernacular houses are addressed in the guidebook and are seen as a positive alternative when owners rehabilitate a structure. The booklet enhances owners' interest to advocate for the saving of structures within their own communities.

Measurements of Accomplishments

The booklet is a step-by-step guide addressing the most complex methods, while referring to the Secretary of Interior Standards. This guide is a form of advocacy from current and new historic property owners and developers. It guidebook addresses the needs of the community and rehabilitation methods. The illustrations and connotations are very relevant to the historic district community.

Best Practice:

The Pioneer Valley project is an excellent example for marketing and advocating the salvage of historic structures. For future advocates see the best practice tips below:

1. A model for homeowners to understand their properties
2. A clear and well understood guidebook and a good advocate for rehabilitation patterns and methods

[115] Rebuilding Communities, 22

Basic Pointers for Future Owners:

For future owners, the *Guide to Historic Housing Rehabilitation* provides direct answers to the most asked questions by property owners. The book encourages owners to distribute the booklet to other local preservation commissions, town offices and the community. The booklet is a useful guide to understand the Secretary of Interior Standards

2.5.3 Public Policy:

Meriam Wesbsters defines Public Policy as the following: "the governing policy within a community as embodied in its legislative and judicial enactments which serve as a basis for determining what acts are to be regarded as contrary to the public good." The Policy Tools Act advocates for public prosperity. Policies work in correlation with state goals and procedures. Some policies are produced on a freelance basis while others have entrenched regulations and authorization due to the absence of compliance. Public policies can help prevent historic district from demolishing their heritage by implementing rules and regulations that help the salvage of historic structures. The following themes can be seen in public policies: building codes and permits, zoning ordinances, tax credits and public and private investors.

Project Example:

New Jersey Rehabilitation Subcodes

Description:

The majority of states in the United States have building codes implemented in public policies; however, the building codes are for those of new developments. New construction can be more costly than necessary, which is applicable to mix-use buildings.

In 1999, the first state to implement building codes " Rehab Code" for rehabilitation projects excluding new development is New Jersey. The "Rehab Code" enforces building codes for current and existing rehabilitation projects. The building code focuses on the current buildings' condition, re-enforcing height, structural framework, zoning, building materials and demolition substitutes.

Investors and Inventors:

New Jersey Department of Community Affairs and Division of Codes and Standards have overseen the success of the building code project for the rehabilitation of current and existing structures.

Project Description:

The Historic Preservation Officer in Hambden, New Jersey, Robert Thomas, mentioned that deteriorated structures do have effects on the neighborhood; therefore, there will continue to be an increase in abandoned structures, resulting in a significant amount of properties to undergo demolition. Demolition of historic structure creates a gap in the neighborhood and historical integrity. Due to the increase in structures undergoing demolition throughout the State of New Jersey, neighborhood blocks have become a popular demolition spot. The new rehabilitation codes have decreased demolition of structures and increased the number of rehabilitation projects. In this state, redevelopment projects are now seen as a practice that is part of a daily method of the development of new buildings and redevelopment of old historic structures, which led to a surplus in the State of New Jersey. Today, private and public investors continue to finance rehabilitation projects. Prior to the interest to reinvest in New Jersey, rehabilitation projects funding was provided for National Register nominated structures and revitalizing historic downtowns.

Project Effectiveness:

Due to New Jersey's Rehab Code, within one year the project finances increased by forty-one percent. In 1999, sixteen communities raised $590 million for rehabilitation projects. Today, re-development is a strong suit for New Jersey's built economy. Forty-three cents of every dollar is allocated for new rehabilitation building permits.[116]

Measurements of Achievements:

New Jersey's Rehab Code project is profitable because the Rehab Code does take into consideration the structures' character defining features. The code encourages and strengthens the plausibility of reusing and investing in New Jersey's historic buildings.

Best Practice Classification:

New Jersey is an excellent example of a state's focus when transitioning new development building codes to rehabilitated structures. Rehabilitation costs have become manageable when the structures have secured the safety of human life. The State of New Jersey continues to rehabilitate projects that would normally be undergoing demolition. The Rehab Building Code increased, while decreasing the new development budget by twenty-five percent.[117]

Basic Pointers for Future Rehab Build Coder Projects:

A detailed policy can gain the State's Historic Preservation awareness and advocate for financial incentives as a rehabilitation investment. New development and rehabilitation building codes regulations vary. Future code officials should undergo a training session to

[116] Ibid.,12.
[117] Ibid.,13.

receive their license. The Rehab Building Code helps professionals extricate building materials, which are then used for future rehabilitation projects.

2.5.2 Financing and Economic Impact

Historic preservation projects and maintenance works are expensive; therefore, organizations advocate for the saving of historic places. The Best Practices Project Examples shown above examined the need for public and private investors. The basic common funding incentives are tax credits, revolving funds and grants. The following project example below shows how to accomplish maintaining economic stability and receiving financial investors and incentives.

Project Example:

Corky Row Housing, East Maine and Niagara Housing in Fall River, Massachusetts.

Description, Inventors and Initiators:

The main investor for the rehabilitation projects in Fall River was the Cushing Companies, comprised of the following divisions and departments: the Fall River Community Development, Fall River Affordable Housing Corporation, Commonwealth of Massachusetts, Department of Housing and Community Development, Massachusetts Housing Investment Corporation, BankBoston Development Company and Niagara Neighborhood Association.

Project Description:

The Cushing Companies rehabilitated 90 apartments consisting of twenty-five abandoned units in neglected neighborhoods: which comprised of Corky Row, East Main

and Niagara streets. The rehabilitation project developers created a portfolio for potential investors to help raise funds for adaptive use projects in neglected neighborhoods. The Cushing advocates obtained historic tax credits, which were used for rehabilitation projects in low-income communities. Other funding came from the HOME program and Tax Credits for communities below the poverty line. Rehabilitation developers raised $10 million in equity funds and $3.8 million in loans requiring minimal interest. This project contained several years of filing yearly tax credit applications. The result of the completed rehabilitation project consisted of employed families.

Project Effectiveness

The Historic Tax Credits helped homeowners redevelop and invest in a few neglected communities in Fall River. The Tax Credits reinitiated the impact of public and private funds. In the redevelopment of Fall River, the Tax Credit impacted portrayed the community's stamina to complete the rehabilitation projects to the best of their abilities. The positive outcomes from the neglected neighborhoods transferred to continued rehabilitation projects within the city.

Measure of Achievements:

The rehabilitation projects in neglected neighborhoods resulted in designing apartments extensively to meet family needs. These projects were a stepping stone to the long-duration of future projects, since Fall River has the city and preservation organizations working together. Each rehabilitation project undergoes a bid; the developers who bid on the projects obtain an advancement in the financial resources.

Best Practice Classification:

The redevelopment projects in Fall River signify professional cooperation in the work environment between the Massachusetts Department of Housing and Community Development, state and private agencies. The rehabilitation developers created a portfolio for future investors. The rehabilitation projects received funds for the HOME program and Housing Tax Credits. Overall, the re-development projects received $10 million in equity funds.

Basic Pointers for Future Rehabilitation Projects

The SWAP rehabilitation projects in Providence are similar to the achievement examples of those in neglected neighborhoods in Fall River. Both Providence and Fall River's rehabilitation teams and professionals managed favorable communications and affiliations, while enhancing the organization's mission and objectives. SWAP and the Fall River rehabilitation teams saw the need for private and public investors and advocated for the re-development of historic structures in a spurned community.

2.5.5 Partnerships

For any historic preservation activity to excel, several partnerships need to work together. Such partners include architects, engineers, developers, designers, state and government officials, community workers and volunteers. The next few examples represent partnerships demonstrating their full potential to reach their team goals to the best of their abilities.

Local Community Organization:

Stop Wasting Abandoned Properties Incorporated (SWAP) located in Providence, Rhode Island.

Organization Description:

SWAP's objectives are similar to those of the Women's Development Corporation. SWAP was selling homes at a dollar each. SWAP invested on the owner occupancy return rather than the sale of home. In addition to rehabilitating properties and creating new development, SWAP builds homes on unoccupied land. Currently, SWAP administers housing activities through the Home Buyer Education Program, which the program provides rehabilitation and development aid to homeowners.

Project Descriptions and effectiveness

Among the SWAP staff members, each area of the organization is efficient in preservation development procedures. From the early days of the organization until the 20th century, SWAP rehabilitated 73 units, which are now affordable housing apartments and forty-three owner occupied units. Due to the increase in public and private funds, SWAP continues successful turning out deteriorated structures and structures undergoing demolition to rehabilitated historic properties.

Measure of Achievements:

SWAP uses one-third of its grants to rehabilitate deteriorated buildings. SWAP incorporates low income housing costs in their reuse projects; therefore, SWAP works in conjunction with the United States Department of Housing and Urban Development as the organization's major funders.

Best Practice Classification:

SWAP is a favorable example of an organization rehabilitating structures in neglected areas in Providence, Rhode Island, while using outside funders and resources

throughout the State of Rhode Island. SWAP has experienced staff members who work with all aspects of buildings undergoing new rehabilitation and grassroots advocates for new development of deteriorated structures. SWAP maintains high standards and focuses on the utmost solutions in re-developing structures in neglected neighborhoods for low income community purposes

Basic Pointers for Future Adaptive Use Projects

Rehabilitating structures in a neglected neighborhood, which can be overwhelming. Therefore, SWAP focuses on the organizations strengthens. The organization started developing projects in smaller communities. Once SWAP gained velocity, then it was easier for the organization to rehabilitate more efficiently.

2.5.6 Green Buildings

Even though a historic neighborhood may be in a favorable condition, the district can still improve by implementing the correct sustainability procedures. Green buildings refer to structures that are environmentally sound and sustainable. These properties use sustainability practices to reduce energy, decrease air pollution, and reuse building materials. Water efficiency is one example of an environmental sustainability practice. Properties often use water for outside purposes such as landscaping and the planting of trees which often can have detrimental effects on water consumption if the property is not engineered to the correct standards. Planting trees native to the area on these properties is one way of strengthening the ecosystem and diminishing water consumption.[118]

Reusing building materials can decrease materials consumed which makes new provisions, decreases the dumping of trash and waste into landfills, and reduces the number

[118] Kathryn Rogers Melino. "Report on Historic Preservation and Sustainability." Master's thesis, 2011.

of demolished buildings; thereby increasing energy efficiency.[119] Using newer technologies for the repairing of the character defining features of buildings also continues this trend towards greater energy efficiency. As climate patterns continue to alter, environmental planning is becoming an ever more heated discussion amongst environmentalists and environmental planners. The United Nations defines sustainable development as "development that meets the needs of the present without compromising the ability of future generation the meet their own needs."[120] However; the Meriam Webster defines sustainability as "capable of being sustained . . . of or relating to a lifestyle involving the use of sustainable methods." This concept relates to the preservation of buildings and structures that should be protected instead of demolished. Therefore, a valid environmental sustainability objective is to protect historic resources through the use of green building methods.

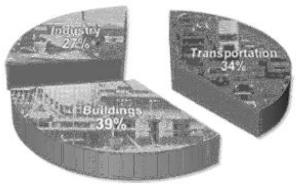
Old construction and rehabilitation procedures are methods that were developed a long time ago, yet they are still applicable in the 21st century. Even though new development may require 21st century tools, preservation of historic sites maintains the cultural fabric that prevailed when the building was constructed. In order to be energy efficient, planners and preservationists need to find a way to rehabilitate aged structures while simultaneously applying energy efficient technologies, keeping in mind the preservation concept of New versus Old. For structures to be environmentally sound the professionals need to use the four R's: reduce, reuse, recycle, and regenerate. Environmental preservation planners should use the four R's as a best practice guideline when advocating for green building methods and environmental as well as cultural

[119]Ibid.,14.
[120] G. Bruntland, *Our Common Future: The World Commission on Environment Development* (Oxford: Oxford University Press, 1987).

sustainability procedures in an effort to counteract climate change. The best green building is "that which already exists."[121] Current historic buildings are feasible resources in the current built atmosphere and may very well be made to be more energy efficient than upcoming new development.

Climate Change Impacts on Historic Properties

The knowledge of how climate patterns affect historic properties is a stepping stone towards a brighter and more environmentally sound future. Currently, buildings in the United States account for, 40% of natural energy consumption,[122] 68% of the consumption of all energies,[123] 60% for non-edible items, fuel fossils, or other raw materials, 40% of the consumption of toxic waste[124], 12% of the consumption of water usage[125], and 38% of CO_2 emission.[126]



Total Carbon Dioxide Emissions from Energy Consumption by Sector, 2008

Figure 3: Carbon Dioxide Consumption

[121] Carl Elefante, "The Greenest Building Is….One That is Already Built," Forum Journal: The National Trust for Historic Preservation 21, no.4 (2007).
[122] Many older buildings were designed to take advantage of natural daylight, ventilation and solar orientation and utilize durable materials. According to a study by the US Energy Information Administration, our older commercial building stock-pre 1920-performs at an average of 80, 127 Btu/sf while new green buildings from 2003 perform at 79, 703 Btu/sf.
[123] Congressional Budget Office, "Future Investment in Drinking Water and Wastewater Infrastructure," (2002); U.S. Department of Energy, "Monthly Energy Review," (Washington D.C.: U.S Department of Energy, 2001).
[124] United States Geological society. "Factsheet Fs-068-98 Materials Flow and Sustainability," http//pubs.usgs.gov/fs/fs-0068-98/fs-0068-98.pdf.
[125] Congressional Budget Office , "Future Investment in Drinking Water and Wastewater Infrastructure," (2002); U.S. Department of Energy, "Monthly Energy Review," (Washington D.C.: U.S Department of Energy, 2001).

[126] United States Energy Information Agency, "Emissions of Greenhouse Gases Report." (Washington D.C., 2008).

In the State of Washington, historic buildings consume 514, 366 BTU's (British thermal unit) BTU's yearly,[127] 89.5 billions of CO2 discharge[128], 694 million gallons of water[129] and 2.2 pounds of demolition debris yearly per household.[130] Throughout Washington, households pay a minimum of $2,000 on utility bills[131] and 50% of the bill goes towards ventilation costs. Based on the whole energy cycle, 50% of usage is for heating, 27% for appliances, 19% for water and 4% for ventilation.[132]

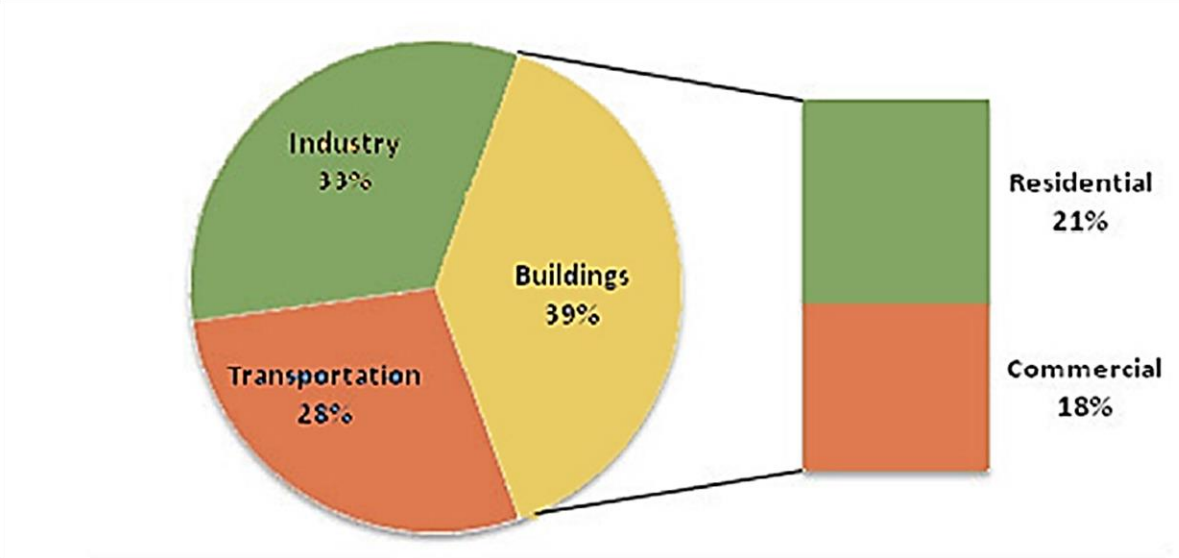


Figure 4: Building Share of U.S. Energy Consumption[133]

[127] Energy," 2009 Biennial Energy Report with Indicators."
[128] Ibid.
[129] Clean Air Council, "Waste and Recycling Facts," http://www.cleanair.org/Waste/wasteFacts.html.
[130] Management, "Construction and Debris Collection and Recycling."
[131] US EPA ENERGY STAR program, http://www.energystar.gov/index.cfm?c=thermostats.pr_thermostats
[132] Changes in Energy Usage in Residential Housing Units. Doe/EIA. http://www.eia.doe.gov/emeu/recs/recs97/decade.html#totcons4
[133] Pew Center for Climate Change, "Buildings Overview: Climate Tech Book," (2010).

According to current data, residential and commercial properties average at 39% of CO_2 discharge, which is 39% of the United States energy's usage.[134]

Consuming Energy in Historic Structures:

Statistics from the U. S. Department of Energy (DOE) mentioned that real estate properties designed prior to the 1920's consume less energy than structures built in the 21st century.[135] Some historic buildings contain sustainable materials for ventilation, natural lighting and solar features. Buildings constructed in the 1920's applied materials common to the area and practiced simple designs that last for centuries.

Despite the lack of technologies, historic homes were hospitable. The U.S. Energy Information Administration designed a study comparing 1920's commercial buildings to structures constructed in 2003. This study shows that the 1920's buildings have a higher Btu/sf (British thermal unit per square foot) performance than 2003 buildings. The U.S. Energy Administration study statistics report that 1920's commercial structures average at 80, 127 Btu/sf and 21st century buildings average performance rankings were 79,703 Btu/sf.[136] These statistics signify the importance of historic structures built using materials native to the area as they were able to achieve greater environmentally friendly operation while implementing simpler technologies. Today, historic structures have decided to go green are re-apply the simpler methods used for construction. These methods are used for environmental sustainability practices to adapt structures to green buildings.

Knowledge of the building envelopes of historic structures and their structural frameworks is crucial. This takes educated professionals such as planners, architects,

[134] Energy, "Building Energy Data Book.", Section 1.1.1.,2008.
[135] Energy, "2009 Biennial Energy Report with Indicators."
[136] Energy, "Buildings Energy Data Book."

engineers, and other preservationists to mentor building owners and adapt buildings to green rehabilitation practices. One of the major cost reduction energy practices is applying practices such as inserting long lasting light bulbs, applying a durable heating and cooling unit, administering padding into the attics and walls for better air circulation, and restoring windows as needed. Assessing building systems is not mandatory; however, it is helpful when implementing green sustainability designs. The statistics aid the planners in choosing the best systems with good performance ratings applicable to the specific site. Buildings adapting to sustainability practices can become even more competent by enforcing traditional building methods. The chart below shows the total energy consumption in the United States by decade.

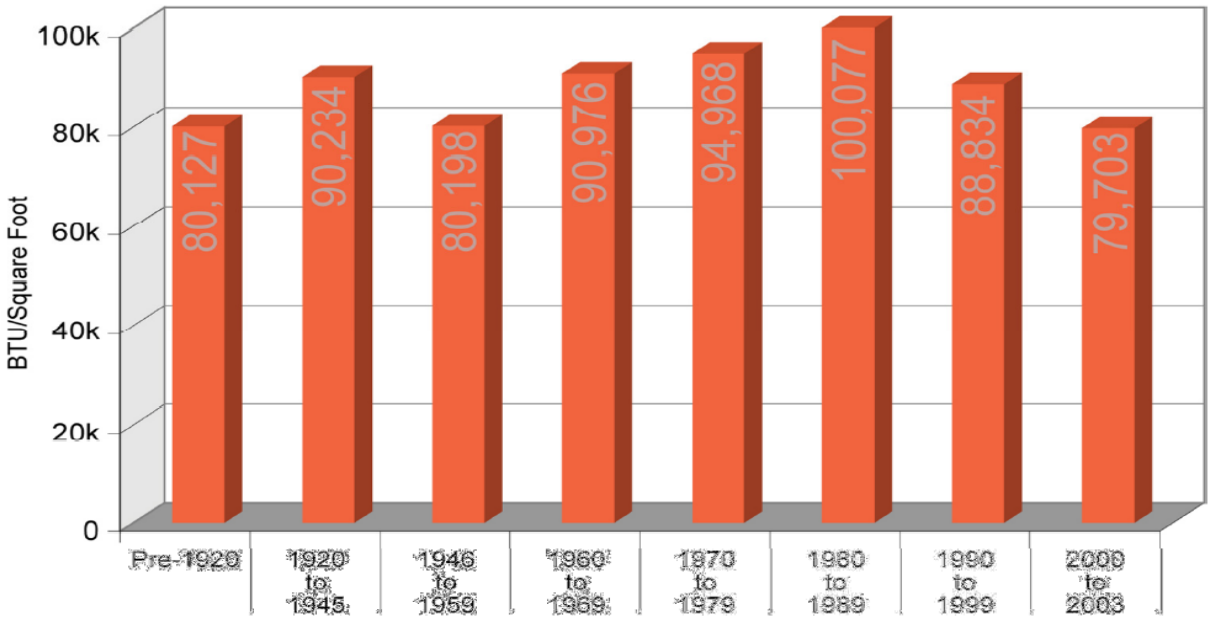


Figure 5: Energy Consumption in Buildings by Decade[137]

Historic Properties throughout the United States use traditional building methods, which are still energy efficient. Newer buildings use the best electrical lighting and air conditioning systems, yet this practice is more costly. Natural lighting and ventilation

[137] U.S. Department of Energy Information Agency, 2009.

system drawings are seen in older buildings with structures that have smaller floor designs and bigger windows. These natural ventilation designs are known as the current new sustainability feature. Natural ventilation practices were long seen before the 1920's, now they are coming back as environmentally sustainable practices. Before the 19th century, older buildings severely relied on the natural air flow. Today, it is imperative for a historic property to be able to manage the interior air flow. Natural air flow in historic buildings flows through windows, doors, and chimneys, which distribute the air in order to ventilate and cool the structure as well as well as drawing up warmth through other vents in the house. Energy-friendly fans circulate warmer air throughout the building and into the colder parts of the structure.

Historic buildings were constructed from materials that were local to the area. Today, construction materials arrive from different countries. However, historic structures stayed true to the historic fabric by using materials similar to the original materials, which react well with the climate change patterns. Since historic properties used local materials, it is plausible that these materials and transportation costs were not as expensive as for overseas materials. Historic buildings already represent best green practices because the buildings show longevity and endurance. Applying the simpler technologies system in the 21st century is becoming a best green building practice. These simple technologies have been around for centuries and have proven their resilience during snow storms, hurricanes, and earthquakes. It is plausible to say that the historic structures are suitably durable. Restoration of these methods should be continuous by constructing with materials similar to those of the original design. New materials must be used since it is not always feasible to obtain the same type of brick or other building material.

Demolition Encounters:

The United States has been one of the world's largest energy consumers and waste producers. The country has used "30% of the world's natural resources," even though the United States has only 5% of the world's population. 60% of construction materials are devoted to building projects and 18% of the natural resources are used for infrastructure designs and other building designs.[138] With these statistics, it is logical to re-use these natural resources rather than increase costs by demolishing buildings and creating new development. Toxic waste and demolition also have adverse effects on landfills. A Brookings Institute study calculated that in 2030, if demolition practices continue and natural resources keep being wasted, the number of demolished buildings and new development projects will account for 82 billion square feet of the recent U.S. housing establishments.[139] Currently, there are 300 billion square feet of open land in the United States and for the 2030 statistics to be accurate, one third of existing structures need to be demolished within the next twenty-five years.[140] The demolition movement is much higher than that of rehabilitation projects. Currently, the United States has 62 billion tons of accumulated demolition debris. There need to be more rehabilitation projects to reduce the toxic waste and debris consumption. This practice will help local, national and international communities reuse their natural resources and reduce waste consumption.

Building Related Construction and Demolition Debris (C&D):

[138] USGS, "Factsheet Fs-068-98 Materials Flow and Sustainability."
[139] Nelson, "Towards a New Metropolis: The Opportunity to Rebuild America."
[140] Ibid.

C&D accounts for two thirds of the nation's toxic waste.[141] Current demolition debris accumulates "155 pounds of water per square foot and new development acquires 3.9 pounds of water per square foot of the building area."[142] Instead of demolishing structures, developers could reuse building materials thereby removing materials from the waste flow and saving precious resources that would otherwise enter a landfill. Reusing building materials is a green practice because demolition of buildings decreases waste debris, and landfills no longer have waste piles; therefore, the environment becomes cleaner and more eco-friendly.

Another best practice that often trumps demolition is recycling. Recycling waste materials, however, can become costly. It is also noted that building materials labeled as recyclable are often not entirely recyclable and this can present more excessive and unforeseen costs. In 2008, it was calculated that the United States processed 250 million tons of waste and converted materials. The median for organic decay in the nation is 4.5 pounds daily showing that organic material does not decay fast enough to account for the amount of material being processed.[143] Recent development projects use modern materials and in the construction process, landfills accumulate waste deposits. Therefore, the best practice for a better and healthier environment is not demolition, but rather the reuse of materials, as this decreases waste accumulation and saves resources for future generations.

2.5.7 Case Studies

At the end of the 19th century, energy planning blossomed consisting of high energy costs and deficiencies that came with the Arab-Israeli war in October of 1973. Energy

[141] Agency, "Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2008."
[142] Monroe, "Diverting Construction Waste."
[143] Agency, "Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2008."

planning stoked people's enthusiasm in the second round of energy costs and shortfalls during the 1979-1980's start of the Iranian rebellion. After the Iranian revolution, oil and energy prices decreased resulting in a decline of national involvement. Even though oil prices increased in the 1900's, the 1980's-90's emerged an increase in energy stewardship. Land use planners acknowledge buildings facing the sun, the planners believe that buildings who more accesses to direct sunlight will have a better heating system. Direct sunlight can be altered for an efficient source of energy used for heating buildings. Structures that are situated east to west on the streetscapes have more solar energy. Since the back of a building is due south, there is more optimal solar energy radiating into the structure. Several neighborhoods have embraced "solar access zoning." This method prevents the planting of trees or vegetation providing no sunlight admission to buildings along the streetscape.[144]

Climate change addresses several variables in the deterioration process of historic structure and building's duration. The changes may not be seen with the human eye on a daily basis; however, the effects are visible over time. Climate patters may reoccur throughout the year; however, the climate changes may not be clearly distinguishable. Extensive climate change factors may be deteriorative to those on a much smaller scale developing a greater catastrophic impact to the structural framework of the building and its surrounding landscape. Trigonometric and geometric structural design may alter the climate change impact of the property. The structure and its system units can help cushion and counteract the climate variables.

When the uppermost ozone sheet is weakened by human consumption of fossil fuels, the sun's radioactive levels penetrating that ozone sheet will increase. Therefore,

[144] John M. Levy, *Contemporary Urban Planning (Upper Saddle River, NJ: Prentice Hall, 2003), 265-266.*

Earth's heating will continue to alter ecosystems and the rendering affect will be the melting of polar caps, subsequent coastal flooding, and ocean currents will accelerate. The best practices section provides two examples of buildings adapting to climate change and progressing to green sustainability efforts. These practices can be transferred when deciding to demolish historic structures in the City of New Orleans.

2.5.7.1 Case Study 1: Pitot House, New Orleans, Louisiana

New Orleans is located in the southern portion of Louisiana on the Mississippi River connecting the city to the Gulf of Mexico. The following New Orleans International Airport data below is an estimate of temperature pressures taken in the 1900's, drafted by the National Climate Data Center.

NEW ORLEANS/INTERNATIONAL LA	
Latitude = 29.98 N	WMO No. 722310
Longitude = 90.25 W	Elevation = 30 feet
Period of Record = 1973 to 1996	Average Pressure = 29.99 inches Hg

Design Criteria Data

		Mean Coincident (Average) Values			
Dry Bulb Temperature (T)	**Design Value (°F)**	Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	96	80	127	7.5	N
0.4% Occurrence	94	79	127	7.4	N
1.0% Occurrence	92	79	126	7.6	N
2.0% Occurrence	91	78	126	7.8	S
Mean Daily Range	17	-	-	-	-
97.5% Occurrence	38	35	24	8.2	N
99.0% Occurrence	34	31	21	8.0	N
99.6% Occurrence	30	27	16	8.0	N
Median of Extreme Lows	26	23	13	9.2	N
		Mean Coincident (Average) Values			
Wet Bulb Temperature (T_{wb})	**Design Value (°F)**	Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	83	91	152	7.6	N
0.4% Occurrence	82	90	148	7.6	S
1.0% Occurrence	81	89	143	7.6	S
2.0% Occurrence	80	87	139	7.6	S
		Mean Coincident (Average) Values			
Humidity Ratio (HR)	**Design Value (gr/lb)**	Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	157	89	1.04	7.2	W
0.4% Occurrence	151	86	1.00	6.9	S
1.0% Occurrence	146	85	0.97	6.9	S
2.0% Occurrence	141	83	0.94	6.9	S
Air Conditioning/		$T \geq 93°F$	$T \geq 80°F$	$T_{wb} \geq 73°F$	$T_{wb} \geq 67°F$
Humid Area Criteria	# of Hours	71	1907	2650	4336

Other Site Data

Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
10	4.8	130	9.3 + 1.9
Ground Water Temperature (°F) 50 Foot Depth *	**Frost Depth 50 Year Recurrence (in.)**	**Ground Snow Load 50 Year Recurrence (lb/ft^2)**	**Average Annual Freeze-Thaw Cycles (#)**
70.8	0	0	8

*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

Table 1: National Climate Temperature Data, 1993-1996.[145]

Table 1 produced the yearly temperature data for 1993-1996. This analysis distinguishes the yearly temperature dispensation. The temperature distributions consist of wet and dry bulb means and medians. The yearly temperature averaged at 80°F and 91°F for dry bulb

[145] NOAA, "Engineering Weather Data," 1.

temperature. The Humidity Ratio averaged at 127 gr/lb at a dry bulb temperature and 152 gr/lb at wet bulb temperate. If the average temperature for a wet bulb temperature is low—while interacting with drier air—then this favorable energy saving practice will decrease air conditioning costs.

Summer median high temperature	96°F (dry bulb) at 80°(wet bulb), 50%RH
Summer 1.0% occurrence high temperature	92°F (dry bulb) at 79°(wet bulb), 57%RH
Summer median high wet bulb temperature	83°F (dry bulb) at 91°(dry bulb), 72%RH
Summer 1.0% occurrence, high wet bulb temperature	81°F (dry bulb) at 89°(wet bulb), 71%RH
Winter median low temperature	26°F (dry bulb) at 23°(wet bulb), 63%RH
Winter 99% occurrence	34°F (dry bulb) at 31°(wet bulb), 72%RH
Median daily bulb temperature	17°F

The New Orleans climate may be classified as hot temperatures with high humidity in summers and temperate winters with high humidity levels. The humidity is easily visible in the mornings. "Annual cooling loads are 78% greater than annual heating loads; of the cooling load, 80% is composed of latent cooling (drying).[146] The Pitot House faces west. The west and south portions of the structure are guarded from solar deterioration by the *gallerie* on the ground and first floors. The east portion of the building is composed of a *petite galerie* sheltering the cabinets from solar radiation. The only portion that is exposed

[146] Preservation Plan-Draft Watson and Henry Associates, 2007.

to solar radiation are the windows located on the northern side of the structure, since the gallerie doesn't protect the windows. This method to secure the building from solar radiation is a trait of Creole architecture; it is a combination of overestimating comfort in a humid climate with high temperatures.

The building's structural framework is known for its ventilation and heating systems. The design of the cooling units help the building mange well in a humid climate with high temperatures. The following attributes acknowledges the Pitot House for its features adapting to climate change as seen below[147]:

1. Gravity, or stack ventilation of the second story through the gap spaced ceiling boards and the loose set slate roof on open nailers, with solar heating of the roof surface and the attic providing the thermal energy movement;
2. Convective cross ventilation of first and second floor spaces, with nearly all rooms featuring operable window and door openings on at least two exterior walls. The exterior walls are significant for their high ratio of opening area to total wall area;
3. Control of solar heat gain into the main block with the deep galleries on the west and south (101 and 201) and the *petite galerie* on the east (106 and 206), the latter fitter with louvered panels at the periphery;
4. Control of winter heat loss, excessive air convection and solar heat gain with shutters fitted to the doors along the house and window openings;
5. Former *punkhah* fan in the living room (103)
6. Thermal inertia and moisture buffering provided by the heavy masonry first floor walls and the brick masonry-filled, timber-framed second floor walls;
7. Separation of domestic heat generating activities, such as cooking, from living spaces by spatial organization of the first and second floors and by omitting an interior stair which would have conveyed heat air from the first floor the second floor.[148]

Before adding mechanical systems to the Pitot House, the structure's internal climate and natural air ventilation systems was an original part to the Creole architecture. Initially, the Pitot House had an unconstrained structural envelope controlling the air flow and ascending heated air. The climate variables in the Pitot House listed below show three

[147] Ibid.,34.

best practice solutions having oversight of the interior climate and help the Pitot House to progress towards a more efficient green building:

1. Open chimney flues in the dining room, north bedroom, parlor, and south bedroom
2. Gap-space boards in the attic floor
3. Loose-fitting windows, doors and shutters

The Pitot House is always looking for opportunities to better the historic practices and make the building more environmentally friendly. In 2012, the Pitot House top-dressed their lawn. The property was having severe drainage issues and the lawn was uneven. This is an environmental friendly practice by applying sand that is equivalent to the texture of the soil and filling the holes as needed, in addition the water no longer moves to the direction of the house but rather away from the house and downhill.

2.5.7.1: Case Study 2: King Street Station, Seattle, Washington

The University of Washington Graduate Architecture Students critiqued several properties throughout that the State of Washington and developed the following best sustainability practices. These environmental sustainability practices can be applicable to New Orleans historic structures.

The King Street Station was established in 1906 and designed by ZGF architects. On April 13, 1973, the Station received placement on the National Register of Historic Places and nominated for LEED silver. The rehabilitation process of the station is continuous as funding permits.

Even though, King's station is continuous, the majestic ambiance of the station is captured in the station's character defining features and environmental sustainability best practices. Current ventilation features are seen in the restoration of illumination through

natural light and airing systems. Spaces holding more occupants will need more modern ventilation units. The upper story ventilation units will be taken care of by current and incoming inhabitants. All ventilation units need to follow the correct energy efficiency procedures. Insulation has been appended to the masonry walls to decrease hot air from approaching the wall interiors. In New Orleans' historic homes, tenants work with preservation professionals and developers, in case of future damages. Sometimes, the tenants take training workshops because not all tenants know how to set up an energy efficient ventilation system. It is best for the tenants, owners and preservationists to work together to supply and choose the best possible energy insulation system.

Building materials are being recycled and reused with the notion of providing an environmentally green sustainability practice. Traditional windows will be reused and substituted for materials that are climate friendly and similar to those of the original windows. Such an example is replacing aluminum windows with those of a wooden frame, recycling the aluminum windows, and then saving those parts for use in another portion of the train station or another historic structure. Another example is reusing the original glass windows and replacing them with unglazed glass windows containing insulation.

In addition, to recycling and reusing materials as needed, the building owners will need to address social sustainability pertaining to the train station are as follows:

Energy:

1. Insure heating and cooling systems are working adequately and meet the energy efficiency standards
2. Reuse heat from the streetcar station and creating space for an eco-district utility system
3. Create space for future smart growth grid systems
4. Improve solar radiation exposure by removing the dropped ceiling and covering the clerestory windows

5. Reexamine and revisit the cross-ventilation system
6. The clerestory windows ventilation system will be controlled on a regulatory basis
7. Improve the wall and roofing insulation system
8. Apply high efficiency units
9. Make sure that guidelines and standards match those of unrefined capacitates

Building Materials:

1. Reusing current construction materials, which are estimated at 60,000 square feet
2. Reuse of original glaze and repair clerestory windows
3. Any replacement of granite will match that of the historic granite on the train station
4. Reuse materials from granite during excavation and apply to restore the staircase
5. The train station needs to update all systems to withhold during an earthquake to strengthen the building's life
6. Recycle old materials and reuse them as needed. Replace old materials with new ones, as long as the building materials resemble that of the old.

Going Green Water Enhancement:

1. Possibly collect water on the historic district properties' roof
2. Diminish water levels from King's station by providing more water usage in other historic structure

2.5.8 Why this is important to Historic Preservation and Coastal Cities

One of the main questions that should be asked by any planning and state official is: why do we need planning? With the continuous change in climate and shifting hurricane patterns, it is mandatory that every historic district has a post-disaster emergency restoration and rehabilitation guide, as well as a post-disaster policy decision handbook addressing the prevention of demolition by neglect. Since 2005, preservation professionals have struggled in the City of New Orleans with demolition by neglect. Hurricane Katrina impacted the city in 2005, yet the demolition problems still continue. Working with preservation professionals at the Louisiana Landmarks Society in 2013, one of the main concerns was

the effect of demolition in historic neighborhoods situated along the Mississippi River and close to the levee system. It is important to know how to treat a building with severe flooding, such as those along the Mississippi River and levee systems. One of the major gaps in the preservation and political system in New Orleans is collaboration and cooperation, which affects the community at large.

Staff members, stakeholders, and community leaders must understand the proper policy procedures and guidelines by collaborating with community professionals and decision makers in order to be efficient in mitigation response efforts. The preservation leadership and political framework both finance demolitions, affecting the political and economic interest of the community. At the local level in the State of Mississippi, advocacy and grassroots organizations were successful in preserving their historic structures because the preservation leadership framework knew how to work with the public, resulting in hardly any buildings being demolished. At the state level in Mississippi, preservation organizations worked with non-profits, governmental organizations, and the Heritage Trust by surveying historic properties, consulting with each team member and obtaining funding for rehabilitation projects. With efficient surveying and quickly obtaining financial incentives, the State of Mississippi obtained enough funding to revitalize the historic neighborhoods. For future emergency preparedness, if federal, local, and/or state governments worked in conjunction with the State Historic Preservation Office—such as the case in Mississippi—then mitigation efforts may be smoother.

Chapter 3: Policy Alternatives

3.1 Introduction

This Policy Alternative section will show policy methods alternative to those suggested in Chapter 2, the literature review. Prior to deciding which alternative methods to use, the historic buildings will be surveyed by preservationists using placards. When filling out the placards it is important to know the type of structure, the historical significance, how much and what was damaged, attached with photographs. A Historic American Building Survey will need to be filed with a thorough analysis of the building envelope and structural framework. Then, the owners, developers, preservationists, and city officials will have a public hearing to discuss all compiled information and the proper procedures to determine which methods will be used to demolish or rehabilitate the structure.

3.2 Policy Alternatives for the Jackson Barracks and Holy Cross Districts:

There are "no uniform safety standards for levees in the United States."[149] Therefore, the National Flood Insurance Program, helped home owners obtain insurance for their flooded homes, as well as received guidance for restoration and rehabilitation practices as those recommended in Chapter 4. The National Flood Insurance Programs are for houses situated in flood prone zones. FEMA has designated one percent of annual chance event (the 100 year flood) as a special flood to the Special Flood Hazard Area (SFHA).[150] This is for property owners who are not able to pay the mortgage or have limited funding, which became known as the *de facto* levee system standard. This effect was a continuation of new

[149] Verchick and Scheraga, 245.
[150] Rachel B. Isacoff, "Raised or Razed: The Challenge of Climate Adaptation and Social Equity in Historic Coastal Communities" (master's thesis, University of Pennsylvania, 2014), 36-37agency

development in flood prone areas, especially those close to the levees. Prior to Hurricane Katrina, it was not mandatory for property owners to obtain flood insurance.[151]

The following methods are plausible solutions for ensuring that shoreline protection systems such as the levee system in New Orleans are properly monitored and maintained, which is a task for the U.S. Army Corps of Engineers, EAS, and the State of Louisiana. Every couple of years the United States Army Corps of Engineers "deployed artificial aeration devices in the major channels to redeuce biological oxygen demand (BOD) and support healthy dissolved oxygen concentration in the water column."[152] Two aerators were implemented in Lake Pontchartrain. The United States Corps of Engineers and the United States Coast Guard decided to make use of booms, skimmers, and suction pumps by releasing them into Lake Pontchartrain. Once the booms, skimmers and suction pumps were released, Lake Pontchartrain needed to be observed, so that oil and waste debris did not increase and flood into the city, as well as the remaining residue from drainage systems in houses .[153]

The Environmental Protection Agency (EPA) notifies the United States Corps of Engineers, if bacteria, soil and petroleum accumulated in the storm water runoff. Due to the 2010 oil spill in the Gulf Coast, the United States Army Corps of Engineers were monitoring and executing activities relevant to keep the City of New Orleans streets cleaned, making sure no environmental hazard debris flowed into the city and made sure that the city did not get flooded. Currently, the U.S. Army Corps of Engineers and the State of Louisiana are working together to protect the city from flooding, while preservationists are implementing flooding and rehabilitation methods to save the city's historic resources

[151] Verchick and Scheraga, 245.
[152] U.S. Environmental Protection Agency, 6.
[153] Ibid.

from flooding and alternative rehabilitation methods, instead of demolition. These recommendations are seen in Chapter 4.

The following steps are alternative procedures to determine how to approach making decisions whether or not to demolish historic buildings in the Jackson Barracks and Holy Cross districts. It is feasible that if a Historic Building Survey and placecard were filled out, then the State Historic Preservation Officer will have all the mandatory information necessary to determine when a public hearing will be scheduled. During the public hearing all surveyors will speak about their findings and provide adequate photography for members of the hearing to see how the structure currently would look like. If the building official decided in less than thirty days of the disaster that he/she believes the building should be torn down, the official must also notify FEMA as stated in the National Historic Preservation Act of 1966. Once FEMA is notified, the State Historic Preservation Officer will hold a condemnation public meeting. Thirty days after the disaster, if a building owner and the building official already decided to demolish the structure, a demolition request must be sent to FEMA. Then, plausibly FEMA will contact the State Historic Preservation Officer who will obtain all necessary documents such as placards, photography, and the Historic Building Survey before making any final decision. Thirty days after the hearing, if the building owner and official decided that the historic building should be demolished, then the Historic Building Demolition Review process must be undergone, as well as addressing Section 106 review procedures.

Since the creation of the National Historic Preservation Act of 1966, there are limited examples of how state and local governmental applications reduce flood impacts by raising structures. The elevating scenarios seen in Chapter 4 are policy improvements that

have addressed the susceptibility flooding historic structures. When elevating structures, professionals need to follow the National Flood Insurance Program and Base Flood Elevation (BFE) guidelines, since the structures elevation is varied depending in which flood zone area the building is residing in. The historical character and proportions need to be considered when raising the buildings. If the structural framework of the buildings are somewhat detached, then the State of Louisiana can follow the State of Mississippi's' guidelines for implementing earthen architectural practices to help elevate the structures above sea level.[154] FEMA has suggested, in order to maintain the building's exterior, the interior framework should be elevated.[155] This method is helpful for historic buildings in New Orleans because they have high wind ceilings and raised window sills. It is plausible that the window sills are below the BFE index. [156] When the city's local zoning ordinances meet the preservation requirements for the Hazard Mitigation Grant Program (HMGP) regulations, then the city can fill it's basements with sand, raise the ground floor above the BFE index, dry flood proof the ground floor, and elevate any utility and mechanical systems above the BFE two feet.[157] The following photo shows different buildings' architectural styles raising above grade:

[154] Matt Chaban, "A storm-proof way to elevate city buildings," *Crain's New York Business, May 24, 2013,* http://www.nps.gov/tps/standards/rehabilitation/sustainability-guidelines.pdf
[155] FEMA, *Floodplain Management Bulletin*, 12
[156] Ibid.
[157] Wisconsin Emergency Management, "Mitigation Leads to Preservation and Economic Recovery for One Community: Darlington, Wisconsin," http://emergencymanagement.wi.gov/mitigation/stories/hm-darlington_success.pdf.

Figure 6: Raising structures above grade[158]

When determining to raise structures above grade, it is feasible to implement a flood wall design, which will help reduce the level of flooding in the property as seen in Figure 7:

[158] Mississippi Development Authority, 41

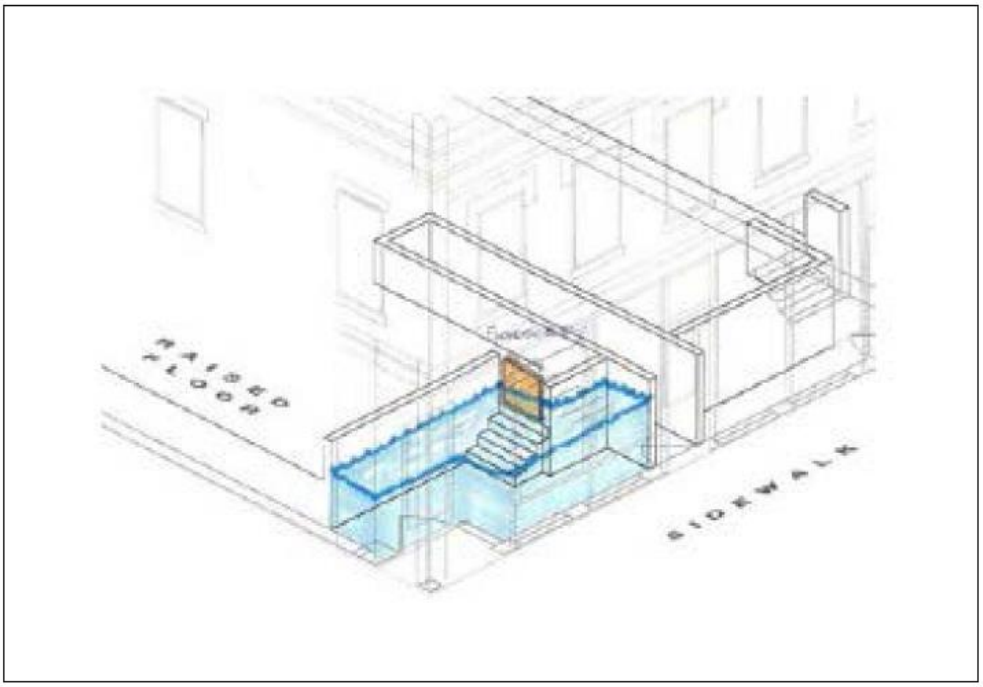


Figure 7: Flood wall design[159]

3.3 Conclusion

Modifying structures above grade with flood-resistant construction materials, by raising structures three to seven feet above grade, can become costly. The costs of retrofitting these structures can range anywhere from $30,000 to $75,000 per building.[160] With immediate need to restore, rehabilitate, and maintain the structure the City of New Orleans needs to design a Hurricane retrofit guide to implement such practices by obtaining photographs, placards, and historic building surveys, in order to determine the proper necessary procedures as the recommendations seen in Chapter 4.

[159] Wisconsin Emergency Management, "Mitigation Leads to Preservation."
[160] Rachel B. Isacoff, "Raised or Razed: The Challenge of Climate Adaptation and Social Equity in Historic Coastal Communities" (master's thesis, University of Pennsylvania, 2014), 60.

Chapter 4 Recommendations

4.1 Introduction

Mitigation standards should be considered when historic properties are renovated or repaired after a flood flooding or a natural disaster. Emergency management, environmental sustainability, architects, preservationist and engineering professionals should implement rehabilitation techniques and criteria to lower the impact of water rising and damage to historic properties. This chapter explains the importance of the National Flood Insurance Program (NFIP) under 44 CFR §60.3 regulations. The Recommendations chapter provides guidelines that can be used to help mitigation and recovery professionals minimize flooding impacts. This chapter focuses on the criteria that needs to be met, in order to reduce flooding, while examining new construction, floodplain designs and new improvements for better results in the future against severe flooding and hurricane funnels.

4.2 Code of Federal Regulations (CFR)

The definitions seen below will be used when discussing floodplain designs and new improvements to historic structures:

1. (CFR) 44 Part 59 describes a historic structure as any historic property that is listed in the National Register of Historic Places or identified by the Secretary of the Interior as meeting the requirements to be eligible for placement on the National Register of Historic Places. This code includes structures that are also eligible for placement by the Secretary of the Interior. According to CFR 44 Part 59, eligibility for placement is determined by the Department of the Interior, which acknowledges that the historic structure has met the National Register criteria within the local districts.

2. Any historic property that is being placed on the National Register must be listed under a registered historic district.
3. The CFR 44 considers listings that are already on a state register or are registered with historic preservation projects that have been approved by the Secretary of the Interior.
4. In 1989, the CFR 44 takes into account listings that are on the local register or preservation projects that are happening throughout the historic district communities, which can be seen in the following:
5. Preservation programs approved by the Secretary of the Interior
6. Programs implemented and overseen by the Secretary of the Interior, even if the projects have not been approved.[161]

1. NFIP Floodplain Procedures and Requirements
    a. The NFIP floodplain procedures are relevant to historic structures that are located in flood hazard areas. These structures need to follow the following two regulations:
2. 44 CFR 59.1 endorses significant improvement of structures, and the regulation exempts the historic properties from significant improvement and significant damage under the NFIP as seen in 44 CFR 59.1:

> "Any alteration of a'historic structure', provided that the alteration will not preclude the structure's continued designation as an "historic structure."[162]

3. The variance criteria of the 44 CFR 60.6(a) regulation states the following:

> Variances may be issued for the repair or rehabilitation of historic structures upon a determination that the proposed

[161] U.S. Department of Homeland Security. *FEMA, Floodplain Management Bulletin: Historic Structures (*Washington D.C.: U.S. United States Government Printing Office, 2008), 4. http://www.nj.gov/dep/hpo/Index_HomePage_images_links/FEMA/FEMA%20historic_structures.pdf
[162] Ibid.,4.

> repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.[163]

Under the regulation mentioned above, historic district communities can make the structures flood resistant. However, the historic building's features should not be altered. Historic communities may create an ordinance addressing new rehabilitation methods to create flood prone historic structures. It is recommended that each historic coastal city creates variances within the historic preservation ordinance to implement new construction, alterations and flood prone designs for all historic properties. The variances should be implemented when flood levels are higher than the ground level of the structure. If the historic communities choose to repair a significant historical structure or significantly damaged structures as stated in 4.2 Heading 1, then it is possible that the property will lose its designation and may not qualify for exemption under 44 CFR §60.3. Therefore, it is recommended to have a permit issued prior to avoiding such confusion. The permit helps drive the property owner to maintain the historical integrity and features rather than adding new construction and the structure losing its historic designation. Furthermore, if the property is granted a significant historical structure or significant damage exemption, it should be taken into account that the exemption should be best given to mitigation procedures that will reduce flood levels.

4.3 Floodways

Any new additions or rehabilitation patterns must be in conjunction with the floodway encroachment regulations of 44 CFR § 60.3(c)(10) and (d)(3) of the NFIP

[163] Ibid.

codifications. [164] The floodway is comprised of the river flow and the adjoining floodplain to parole the base flood without having flood levels rise more than one feet as stated in 44 CFR § 59.1, "regulatory floodway" provision.[165]

44 CFR § 60.3(c)(10) is applicable to waterways, currents and rivers as shown in the following provision:

> Require, until a regulatory floodway is designated, that no new construction, substantial improvements, or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's FIRM [Flood Insurance Rate Map], unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.[166]

§ 60.3(d)(3) provision also applies to waterways and currents. The main difference between this provision and that of 44 CFR § 60.3(c)(10) is that this one has the necessary information available to the historic community to entitle a floodway and has established BFE's (base flood elevation).

The § 60.3(d)(3) provision states as follows:

> Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.[167]

If any additions expand beyond the original square footage of the historic structure, the floodway provision must be in conjunction with 44 CFR §60.3(c)(10) and (d)(3). Under 44 CFR §60.3, (d)(3) prohibits the obstruction of new additions that would increase the level of the current.

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[164] Ibid.,5.
[165] Ibid.
[166] Ibid.,6.
[167] Ibid.

4.4 Non-Contributing Structures and New Additions

Non-contributing structures have no historical significance and have no contribution to the historic fabric of the local district. Historic districts may have sectors of vacant lots and underdeveloped property. A district as a whole may not be exempt from NFIP floodplain provisions. 44 CFR §60.3 regulations apply to current vacant lots and underdeveloped properties as those of the non-contributing structures and new additions.

Many historical districts argue that each new addition or non-contributing structure should be granted new provisions under which new construction can be articulated. However, emergency management professionals argue that such a scenario would have an adverse effect and cause an increase in flood damage and loss of human life. It is recommended that flood prone non-contributing structures and new additions comply with the variances under the NFIP standards and guidelines. Any new design should be in compliance with the NFIP flood management provisions and those of the historic district. As an example to reduce flood levels, a historic structure can be raised pilings from earthen materials or on another foundation, and the lower area of the building should be capped with a façade. The façade will not deteriorate the aesthetics and integrity of the historic neighborhood. If a structure is raised on pilings constructed from earthen materials or another foundation, it must meet the NFIP elevation requirements of raised structures.

4.5 Recommendations for Additions to Non-Contributing Structures

Property owners choose to add new improvements or alter the current non-contributing property transitioning into a historical building by adding historical features; therefore, the building receives the perks, such as properties within the historic districts. Such perks are granted if the non-contributing structure replaces modern features with those of the current time period in history to match the era and design of the building by substituting modern siding and roofing with historical elements. If the new addition truly signifies a substantial addition to the non-contributing structure, then the property is qualified for relief services under 44 CFR §60.3 regulations. The property owner may choose to file for contributing status to the State Historic Preservation Office or to the Tribal Historic Preservation Officer. If the building does become eligible and meets the contributing status, the historic district community may award a variance under 44 CFR §60.3(c)(2), (c)(3), and (e)(4) regulations. However, the property owner must make all the necessary changes to the property to be fully granted contributing status. If the new additions or improvements are undergone all at once or in separate procedures, the historic district community needs the proper documentation on file to assists the property owner and guides him or her to receive relief services. In order for the property owner to receive a building permit and relief services, contributing status must be issued beforehand. Some owners may choose to receive preliminary approval. If preliminary approval is granted, the owner must understand that preliminary approval allows temporary relief assistance. During the application process of the building permit, then contributing status will be granted. For all criteria mentioned above, the property owner is encouraged to undertake flood damage assistance and abatements to reduce the flood risk of the historic property. The owner must note

that any flood damage measures implemented may not interfere with the historic district contributing status; otherwise, the contributing status will be withheld.

4.6 Flood Coverage

Flood insurance is recommended when property owners have mortgages, federal grants and other means of financial assistance. Flood insurance coverage will help reduce costs once a structure has been restored or rehabilitated after flooding from a natural disaster. Currently, FEMA articulated an actuarial rate that all historic property owners must abide. These measures are pertinent to historic structures built after December 31, 1794. The actuarial rate applies to buildings that are located in flood prone areas. Owners of flood prone structures pay a higher actuarial rate than those that pay taxpayer dollars. Flood insurance calculations are determined based on flooding impact. The flood risk premium's calculations are based on the flood risk zone, ground level or level underneath the BFE, number of floors and rooms, and present enclosures. However, structures that are not accurately elevated will have a higher premium, due to a higher flood risk level and impact on the property.

Subsidized flood rates are granted for all historic structures under a given variance. Historic properties are charged at a similar rate than real estate properties. These historic properties are classified under the pre-FIRM (Flood Insurance Rate Map). The historic structures must meet the 44 CFR §59.1 regulation for an actuarially rate not to be effective. If a historic property is altered or relocated if new additions have been added, the historic building becomes classified as Post-FIRM property. The Post-FIRM rates are quite higher than those of PRE-FIRM.

The Flood Rate Map's objective is to continue to maintain the historic building's designation. The property owner's insurance does not cover damage to the building; therefore, it is recommended that all property owners purchase flood coverage. Unfortunately, disaster aid is only available when the current president issues an evacuation. The disaster aid includes a loan, which the homeowner will need to pay back. There are few flood insurance options; however, it is best for the property owners to see the available chooses and decided what is best for the historic structure from a financial perspective. Flood insurance helps recover the building efficiently.

ICC (Increased Cost Compliance) is not provided for historic properties that are excluded from the floodplain standards and regulations under 44CFR §60.3 regulations. ICC compensates for flood damage only after the disaster. ICC will compensate $30,000 on any historic property classified as extraordinary or affected by multiple disaster strikes.[168] The compensation costs include maintaining, removing, transposing or raising the building on higher elevation. ICC is also provided to historic properties that are exempt. The exempt properties must meet the provision requirements and mitigation standards in order for ICC to compensate the flood damages.

4.7 Reducing Damage to Historic Properties

One of the main damages to historic properties during a flooding is absorption of construction materials and collapse of the structural frame. The sewage system is another element that may cause damage to the historic property. Fractured utility lines result in

[168] Ibid.,9.

fires; therefore, there is an increase in mold and mildew advancement resulting in continuous moisture problems. The building materials become inflamed, diminished and deteriorated.

Even though some historic buildings are exempt from the floodplain management regulations, it is recommended that any new additions and improvements should require using floodplain management mitigation standards and guidelines when the owner, developers, and preservation professionals decide to restore the historic building. Renovating a historic building provides the property owner with future opportunities to reduce the flood impact on the structure. To determine the proper procedures to alleviate the historic structure from flood damage, surveyors would evaluate the flood risk and damage. Mitigation measures run from low to high costs such measures include utility improving, elevating, and flood proofing; additional costs would require moving the historic buildings outside the flood zone areas. All of these scenarios have the following perks included in their cost damage estimates:

1. Decrease in flooding damages-Historic properties may not withstand the severity of flood disasters. It is better to have effective mitigation measures rather than none.
2. Decrease in flood coverage premiums – Buildings outside the flood zone areas or above the BFE can qualify for actuarial rates, which are less costly than subsidized flood rates.
3. Long duration of maintenance to historic properties – These mitigation measures can help prolong the longevity of the historic structure. This is cost efficient since mitigation measures and maintenance can be expensive, if the owner chooses not to have insurance.

Consolidating mitigation measures into historic properties is challenging. The main challenge is making sure that when the mitigation measures are implemented the historic properties will not lose their historic designation. Any implemented mitigation measures should be handled with care, so that the historic properties' architectural features are not

ulterior. Modifying a historic building to decrease the flood risk impact can be done effectively and not interfere with the historic district status and the historical integrity of the property. To continue the preservation of the historic properties, it is recommended that the property owners consolidate with preservation professionals on the Secretary of Interior Standards to maintain the structures' historic and architectural features to the best of their abilities. The owners may want to reference the Preservation Briefs when determining whether to rehabilitate, restore and preserve the historic structures.

There are several mitigation measures implemented to rehabilitate, restore and preserve historic structures from flood disasters. Mitigation measures are used to reduce the flood risk impact. Property owners and working professionals must keep in mind that mitigation measures will not alleviate the flooding completely. The following procedures listed below are recommended for the preservation of the longevity of the historic buildings, which will have minimal ramifications on character defining features:

1. Relocating properties to a location that is above sea level or above the BFE. Remove all cultural resources from the basement, since the basement has firsthand access to the flow of the flood current.
2. Implementing a drainage system. Raise the grade to alleviate drainage in the opposite direction of the building and have drainage flow away from the structure. The grade should be raised adjacent of the structure. Property owners may choose to use masonry and concrete window wells at the basement level.
3. Raising the utility and HVAC systems above the BFE level.

4. Wet flood proofing modern materials that are flood prone. Wetflood proofing will help restore the building materials to their original state. Property owners may choose to remove the modern construction materials, then flood proof the structure.

5. Flood prone materials may be used under the BFE. The materials will help improve the structure to endure coastal flooding.

6. To reduce flood levels and structural destruction in the basement it is best to fill up the basement with sand or gravel and raise any utility furnishings.

7. Wet flood proof the basement prior to coastal flooding. Wet flood proofing the basement will help counterbalance the hydrostatic tension on the walls, and support the structural framework by balancing the interior and exterior wall current levels. Deluge prohibits the uplift of hydrostatic forces in the basement. Deluge can require altering the basement's design and building materials, mitigation measures, maintenance techniques and relocation of equipment to flood proof the area for coastal flooding.

8. Installing window wells will help protect historic structures from the flood currents. Brick, concrete block and poured concrete are recommended to use for low level flooding. These blocks are used with a sealant. It is not recommended that the sealant be undermined by polishing thoroughly.

9. It may so happen that the above recommendations will not be plausible to protect a historic property. Therefore, it is recommended that temporary measures be implemented. An emergency plan must be implemented prior to a disaster, and all materials need to be stored for safe

keeping. Temporary measures include sand-bagging, installing temporary barriers and stockpiling materials above the ground level. The planning time is crucial prior to a disaster strike or coastal flooding. Therefore, it is not advisable to keep flooding away or out of the structure, since the interior and exterior walls may not withstand the hydrostatic, hydrodynamic and buoyancy water levels, as well as debris accumulation.

Building owners may require more detailed emergency measures if the structure is not able to withstand the currents from the flooding. The property owner may choose to implement the following mitigation measures: elevation, flood proofing and relocation as articulated in section 4.8.

4.8 Elevation

It is recommended that historic structures in flood prone areas are elevated above the BFE. Elevation is one mitigation measure to endure coastal flooding, a rather feasible solution to solve coastal flooding dilemmas. Other factors may need to be examined to determine the best solution to protect the façade from coastal flooding. The two functional elevation alternatives to address coastal flooding are the following:

1. Raising the historic structure above the BFE or relocating on more modern foundation.
2. Lifting the interior flooring above the BFE**.**

New Orleans historic properties can be raised on steel beams placed under the building; jacks are used to raise the pillars and building above BFE. During the replacement of the beams process, a new elevation is designed, and the building is depressed into the current foundation. It must be noted that the elevated techniques need to help the historic properties endure hydrostatic and hydrodynamic pressures, as well as changes in buoyancy

and any unexpected corrosion. It is best to determine which type of foundation to implement and which architectural style to consider. If it is not feasible to elevate a historic property above the BFE, then it is recommended to elevate utility equipment above the BFE. Another alternative to elevating historic properties is to elevate on pilings or foundation walls and to then awn the structure with an architectural framework that is in equilibrium with the building materials.

4.9 Flood Proofing

Flood proofing is an efficient mitigation technique to help protect historic properties from coastal flooding. There are two efficient forms of flood proofing, dry and wet. Dry flood proofing makes the building lighter to withstand flood currents. This technique helps the building to abide demolishment, deterioration and disintegration. Dry flood proofing requires an experienced engineering or an architectural designer. Wet flood proofing equalizes the water pressures of the interior surface with the hydrostatic pressure on the exterior surface of the building and helps brace the structure against coastal flooding. It is recommended that construction materials are recouped with flood proof features.

Coastal flooding can result in a historic community decreasing property values and losing millions of dollars due to natural catastrophes. It is important for a historic community to innovate because with innovation the historic community can maintain its historic value and southern charm.

Since the majority of historic properties in New Orleans have high ceilings such as those in Darlington, North Carolina, this becomes an advantage. The high ceilings give the ground floor plenty of room to add flood walls without affecting the historical elements of

the buildings. Basements can be filled with sand and gravel. This is another flood prone technique that does not affect the historical elements and integrity of the property.

4.10 Relocation

Relocating a historic property proffers the most protection against coastal flooding. Relocating the property is moving the property out of the flood zone designated areas. Relocation is applied when the historic structure has been impacted by coastal flooding and natural disasters numerous times. The building will be raised onto a caravan, which will move the structure to the building's new location. Masonry structures such as slab-on-grade are the most difficult to relocate since these properties' structural framework needs continuous support. If the structural framework is not supported during the transition, the chimney may deteriorate and collapse the façade. Once the historic properties are removed, the historical community will lose a piece of historical integrity, significance and value.

4.11 Mitigation Measures Benefiting Historic Structures

When a disaster severely impacts a community, the fiscal and communal spirit of the district requires uplifting. The community can take mitigation procedures as discussed in Chapter 4 to reduce coastal flooding and demolition of historic properties. Mitigation procedures will reduce the current flow and restore the buildings, so that demolition actions become the last resort. Mitigation procedures can help accommodate historic structures and resources by assisting with flood insurance premiums to continuously restore, rehabilitate, renovate and preserve the historical integrity and significance of the local historic districts. The local district communities use mitigation measures to identify which historic resources are in danger, determine which historic structures need the most attention, assess economic

loss, evaluate plausible threats, establish a community objective, and develop a mitigation plan that address the needs of the historic district community.

4. 12 Sustainability Building Methods

Human activity has been detrimental to the environment. Therefore, climate patterns change, and essentially all forms of life will adapt to the changes. Sustainability can be described as the four R's: reduce, reuse, recycle and regenerate. It is feasible to nurture environmental sustainability practices for historic homes. Best energy reduction practices will decrease dependency on carbon byproducts and radioactive waste. Alternatively, sustainability in the 21st century needs to meet today's generation without compromising the needs of the future generations and their goals for sustainability. A society with good sustainability practices efficiently meets the needs of the historic district community. Such a community is able to preserve, maintain, conserve and restore their historic districts through environmentally sustainable methods.

4. 12. 1 Reduction of Materials

Using local building materials will decrease energy to transfer building materials to the work site and reduce materials processed and thrown out. Adequate architectural designs can decrease energy levels by fifty percent. Energy efficient materials are quoted at twenty percentage usage in the historic building. Therefore, energy levels can be reduced in newer constructions rather than in older historic buildings and materials. The United States occupies twenty-five percent of the world's energy. [169]

[169] Edward Jon Cazayoux, *A Manual for the Environmental and Climatic Responsive Restoration and Renovation of Older Houses In Louisiana*, (Louisiana: Baton Rouge, 2003), 35.

In the State of Louisiana, water flows continuously at a high pressure in the plumbing systems and rivers. It is recommended that the State of Louisiana implements water reduction best practices. Yearly, the City of New Orleans disposes of unused water. Many historic homes are constructed with the idea of resale or demolition in the event of severe flooding, a common problem in the Jackson Barricks and Holy Cross Historic Districts. Architectural designs and use of space are components influential to the construction of the neighborhood's living space. Adequate design implementation can make the living space more enjoyable and energy efficient.

4.13 Reuse Alternatives

4.13.1 Reuse

If the property has historical value, all actions to preserve the historic structure should be taken. Reuse of structures is an environmentally best practice activity. Therefore, the salvage of a historic property is sustainable and often preferable to its destruction. With good architectural design implementation, rehabilitation projects, and maintenance it is not uncommon for working professionals to turn a deteriorated building into a reusable building. Such instances can be seen in the following re-usable designs: a mill altered into an architectural studio in Logan, Utah, a major railway station turned into a hotel in Saint Louis, Missouri and a textile mill reversed into market-rate housing in Canton, Georgia.[170]

4.13.2 Cost-Effectiveness of the Rehabilitation of Historic Properties

[170] Dovonan D. Rypkema, *The Economics of Historic Preservation,* (Maryland: Washington D.C., 1994), 24.

Rehabilitation or new development of the historic property is a cost effective process. Rehabilitation methods are used instead of demolition. If the rehabilitation changes are minor, then the cost of the rehabilitation of the current building to new structures is a 40:50 percent.[171] Rehabilitation updates such as windows, mechanical installments and energy sustainability methods help make rehabilitation cost efficient. Historic tax credits projects save the property owners development costs as seen in the information below:

> For the five most recent years (FY99-FY03) over half the projects receiving the historic rehabilitation tax credit have cost less than $500,000 with an average of 17% being less than $100,000.[172]

Utility and mechanical systems such as plumbing, wiring and electricity are well worth the investment for structures situated in coastal areas. These appliances have a lifespan of twenty-five to thirty years. They also enhance the life of the structure and generate net savings in the long run. In the City of New Orleans, the majority of building appliances are out dated or obsolete.

4.13.3 Preventing Urban Sprawl

If historic buildings were reused and rehabilitated, then there would be a decrease in economic urban sprawl costs and a reduction in air pollution levels. For example, instead of applying $20,000 to new development projects, the City can use those funds and administer them to rehabilitation projects, resulting in saving transportation, infrastructure, air pollution and public transit costs. Such costs strengthen investments distributed amongst public and private sectors. Preservation and reuse of historic residential and

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[171] Ibid.
[172] Ibid., 90.
Federal Tax incentive for Rehabilitating Historic Buildings: Statistical Report and Analysis for Fiscal Year 2003

commercial buildings can decrease the longevity of sprawl costs without averting new construction.

4.13.4 Urban Sprawl and Existing Infrastructure

Historic preservation redevelopment reduces infrastructure and transportation costs. Instead of creating new space in the historic district, it is logical to rehabilitate and redevelop buildings that already exist. Public transportation is often an issue in downtowns throughout the United Sates because there is not adequate and efficient public transit. New Orleans has decent public transit since their historic districts lie on the street car and bus lines. However, the transportation system is not always efficient, and the buses do not always run back to back, as some have an hour waiting period. Not every trolley stop is along the historic districts route. It is best to have a stop that is feasible to walk and bike to because his will reduce the need for new infrastructure and air pollution. This is a common method utilized by cities that are going green. With the predicated climate change constantly, if historic districts were to adapt to a few transportation sustainability practices as seen in Graz, Austria or in Bratislava, Slovakia, then there would be less need of infrastructure. Streetcars in Bratislava run from the city outskirts into the city. Not all street cars go to every section of Bratislava, this is where buses achieve there efficiency. In Graz, the streetcars are more efficient; since they run in the city, every direction and through the alleys. Here it is feasible to even take a bicycle. Both cities are implementing good forms of green transportation practices. Bratislava still needs to progress as an environmental city, and Graz has a balance of saving automobile costs and air pollution.

4.13.5 Reuse of Current Pedestrian Infrastructure

Infrastructure is already in place when historic neighborhoods use electricity, mechanical and utility systems, telephone poles, streets, curbs and gutters. Infrastructures use similar appliances as those of historic homes. Redevelopment of a historic property is one of the most common and efficient reuse methods. When a building is undergoing redevelopment, infrastructure is already in motion. According to Donovan Rypkema, the reuse efficency method saves taxpayer dollars. It is less costly to redevelop the historic homes and districts than to add new infrastructure.

4.13.6 Building Materials for Old versus New Development

For generations, preservationists have been implementing the same methods to protect historic buildings. The same methods have transpired into yesterday's methods. Due to the changing environment, preservationists continue to learn about the correlation between aesthetics and economics and buildings and people. The quality of the historic building design is the most important component to remember when planners and developers look at the city's future economic evolution. The building tools and materials used to create the current structure can be also used for redevelopments, additions or new creations.

4.13.7 Preservation versus New Development

The aged proverb "time is money" is applicable to new development projects. In new development preservation projects, the construction time is decreased thereby saving on costs. Rehabilitation projects reduce time spent working by eighteen percent.[173] A regulatory framework saves time. The majority of construction workers see obtaining additional reviews as timely. In preservation projects, a pre-approved rehabilitation plan

[173] Ibid.,91.

gives the construction workers more time to create the historic structures. A favorable developer works with preservation commissions and staff to develop a good historic structure. This method saves time and energy when both sides are coordinating and working together.

4.12.8 Rehabilitation versus New Development versus Demolition

Most rehabilitation and new development projects verify costs by undergoing a typical cost implementation scenario. The majority of developers see that rehabilitating a structure is the equivalent to the costs of constructing a new one. Therefore, the assumption made that rehabilitation is unnecessary when a new building can be designed. In such scenarios demolition is mentioned. The cost of demolition projects can be more expensive than rehabilitation and new development projects. It is plausible that demolition costs can be miscalculated. For example, structures demolished in the Jackson Barracks districts added additional costs due to demolition, debris removal and disposing of debris. It is recommended that prior to make any demolition decisions, historic buildings should be surveyed using a placecard as seen in Appendix B. Once the placecard is filed and section 106 review procedures are implemented, a hearing should be conducted along with a tour of the property with the City of New Orleans, preservation professionals, decision makers and volunteers to determine the final outcome. It is understandable that environmental sustainability efforts are more costly than demolition. All proper procedures need to be followed prior to any decisions being made. These efforts have been lacking the Jackson Barracks Historic District. Therefore, a preservation professional should work under the City of New Orleans, along with other preservationist; that way all buildings follow the correct Section 106 review procedures and there are no communication errors.

4.13.9 Demolition a threat to the Historic Community

Demolishing a property should occur when the building has been so severely deteriorated that preservation efforts will not influence the longevity of the building. Buildings that receive permits are those that have been detonating, the owner decides that the property lot will be used for multiple uses, there is deficiency in conservation and the building owner has been continuously trying to lease or sell the property. Prior to any demolition activities, Appendix C should be consulted for a list of techniques to be used on structures affected by flood disasters that are relevant to those situated in Flood Zones.

4.13.10 Recycle

If the building has been deteriorated or is undergoing demolishing, it is best that the construction materials be recycled. Throughout New Orleans, historic buildings were built with cypress woods. The cypress trees have excellent weather durability characteristics and are insect repellant. Due to the longevity of the buildings withstanding severe storms, the French colonists used cypress wood throughout their buildings. It is recommended that historic properties undergoing rehabilitation or redevelopment use materials from historic buildings that have withstood several storms. Another popular wood used for building construction by the French colonists was red pine. Red pine wood is used in cabins and historic homes in the State of Louisiana. Red Pine and Cypress woods are still accessible today. Red pine is easy to work with, and rot resistant.

4.13.11 Regenerate

The father of modern earth sheltered architecture, architect Malcom Wells, in his works mentions numerous times that about rejuvenating the earth. Mr. Well's idea of

regenerating is purchasing an unsuitable property and re-developing the property using earthen materials. This method can also be replicated for historic properties that are or have been approved for demolition, by altering the property and re-developing the site with earthen and environmentally friendly materials. Materials for new development would incorporate historically compatible materials along with trees and plants and the earth's soil, as seen in Mr. Well's architectural designs. This method will make the district move toward green construction and become an environmentally friendly historic district; however, it must be noted that wooden materials installed need to be insect repellent, rot resistant, and treated. Prior to making any environmental sustainability decisions, the following measures must be calculated:

1. Energy in rehabilitated buildings
2. Infrastructure or rehabilitation cost savings
3. Decrease in automobile transportation
4. Impact on land fill and cost saving efforts
5. Examination of annual operating costs comparing new developments and rehabilitation
6. Cycle measuring expenditures and energy used in construction
7. Reduction of miles traveled (VMT) and CO_2 omission
8. Calculation of unoccupied and untouched green acres for the purpose of reuse or rehabilitation

4.13.12 Conclusion

The less reliant the City of New Orleans becomes on unsustainable energy, the easier it will be to implement sustainable energy technologies in construction. Therefore, it is important that the structures are adjacent to green energy sources. Currently, only eight percent of energy originates from renewable resources.[174] New Orleans has a rich architectural history, and historical value; currently, the historic districts are threatened with demolition. Flood proofing and sustainability best practices will help reduce demolition

[174] Edward Jon Cazayoux, *A Manual for the Environmental and Climatic Responsive Restoration and Renovation of Older Houses In Louisiana*, (Louisiana: Baton Rouge, 2003), 37.

dilemmas throughout the City of New Orleans. The flood proofing recommendations and practices will also reduce the energy consumption and will help the longevity of the historic district and set an example for other cities that struggle with brining their historical heritage into the 21st century.[175]

[175] Ibid., 35.

Section 5: Conclusion

Preservation professionals believe that the cultural heritage of historic district neighborhoods faces the threat of destruction of property through demolition as a result of climate change.[176] Current procedures in place for the City of New Orleans do not allocate resources to manage the loss of historic integrity, thereby resulting in an undermined appraisal of tangible assets.[177] Historic preservation professionals take into consideration the public's wish to maintain the historical significance of their city. Culture emphasizes "a sense of social solidarity that allows people to live and work together on common goals" and the historic districts of New Orleans are key to representing the unique culture of this city.[178] For future preservation policies to be progressive, the policies need to involve agencies with social justice procedures "and work toward the creation of livable communities for all."[179] Incorporating modern technology with traditional building methods, as opposed to demolishing and redeveloping an area, is a culturally sensitive topic. However, when planners and city officials incorporate these techniques, the result is very often increased usefulness, economic prosperity, sustainability and political validity of these districts. This has the additional benefit of serving as an example and inspiration towards other coastal historic communities that strive to bring cultural relevance to the modern world. Working quickly and efficiently, coastal cities can redevelop historic communities by creating projects and public policies that adapt to social changes while still respecting elements of the past.

[176] Bathel-Bouchier, 191.
[177] Adger et.al., 349-350.
[178] Bathel-Bouchier, 191.
[179] Ibid., 188.

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Appendices: Placards Created by FEMA

Appendix A: Placards

ADOPTION OF PLACARDS

One of the functions of the ATC-20 publication was the development of placards that clearly identified the condition of buildings to owners and occupants. These placards were first used after the Loma Prieta earthquake in 1989. A panel was convened by the Applied Technology Council to review ATC-20 and update the document based on the Loma Prieta experience. One of the major revisions to come from that panel was to revise the three placards. These revised placards have been included in the ***Post-Disaster Safety Assessment Program,*** and in this document.

Placards have been widely used in past earthquakes to denote the condition of buildings and structures. In many cases, the placards have been those recommended in the ATC-20 publication. Unfortunately, most jurisdictions have not officially adopted placards. Technically, these unofficial placards represent only a recommendation from those who performed the evaluation.

As a recommendation, the placards do not carry the weight of law and cannot be enforced. Adopting the placards by ordinance makes them official and enforceable. Once the placards have been adopted and before they are printed, the jurisdiction seal, ordinance number, and the responsible department's name, address, and phone number should be added.

In past events, there have been a number of reports of placards being removed from buildings by owners or tenants. In other cases, there have been reports of the unauthorized change of placards, usually from UNSAFE to one of the other categories. In both cases, adopting placards by ordinance allows the jurisdiction to enforce the posting with local police or sheriffs if necessary. Placards are placed on a building to protect the owner, tenant, and the general public. No action should be permitted that would compromise such protection.

It should be remembered that only authorized representatives of the jurisdiction may place official placards. For this reason, the ***Post-Disaster Safety Assessment Program*** (SAP) recommends that the safety assessment evaluators be deputized. If this is done, evaluators can place official jurisdiction placards when they complete their evaluations. If evaluators are not deputized, the jurisdiction must send out its personnel to post the buildings.

Some jurisdictions have become concerned that they will become financially responsible for providing worker's compensation coverage if they deputize volunteers. In accordance with Article 17, Section 8657(b) of the ***California Emergency Services Act,*** local government is **not** financially responsible for providing the volunteers with worker's compensation coverage if the jurisdiction deputizes volunteers. The volunteering Safety Assessment Evaluators are registered with OES as Disaster Service Worker Volunteers and are provided worker's compensation coverage by the

State of California. Evaluators who are State or local government employees are covered by their respective jurisdiction and respond under mutual aid agreements.

CALBO and OES encourage all jurisdictions to adopt the revised ATC-20 placards in order to have a uniform placard system in place throughout the state. To assist jurisdictions in this process, CALBO and OES have developed the following **model ordinance template** as a guide in adopting these revised placards. Please review the template and placards with your agency attorney. Once the placards have been adopted, these copies can have the necessary information added and be used to create reproducible masters.

We hope this document provides you with the assistance you need to accomplish this important task.

2003/04 Emergency Preparedness Committee

ORDINANCE NO. _____

AN ORDINANCE OF THE CITY OF (TOWN OF, COUNTY OF, CITY AND COUNTY OF) _____ STATE OF CALIFORNIA, ADDING A NEW CHAPTER ____ TO DIVISION _____ OF THE MUNICIPAL CODE (COUNTY CODE), RELATING TO PLACARDS USED TO DENOTE CONDITIONS RELATING TO CONTINUED OCCUPANCY OF BUILDINGS.

The City Council (County Board of Supervisors of) of the City of (County of, City and County of) _____, State of California, ordains as follows:

Section 1. Chapter ___ is added to Division __ of Title __ of the City of (County of. City and County of) _____ municipal (county) code, to read:

Chapter _____. Safety Assessment Placards.

Sections:

_____Intent

_____Application of Provisions

_____Definitions

_____Placards

Section _____ Intent

This chapter establishes standard placards to be used to indicate the condition of a structure for continued occupancy. The chapter further authorizes the Building Official and his or her

authorized representatives to post the appropriate placard at each entry point to a building or structure upon completion of a safety assessment.

Section _____ Application of Provisions.

(a) The provisions of this chapter are applicable to all buildings and structures of all occupancies regulated by the City (Town, County, City and County) of _____. The Council (Board) may extend the provisions as necessary.

Section _____ Definitions.

(a) **Safety assessment** is a visual, non-destructive examination of a building or structure for the purpose of determining the condition for continued occupancy.

Section _____ Placards.

(a) The following are verbal descriptions of the official jurisdiction placards to be used to designate the condition for continued occupancy of buildings or structures. Copies of actual placards are attached.

(1) **INSPECTED - Lawful Occupancy Permitted** is to be posted on any building or structure wherein no apparent structural hazard has been found. This placard is not intended to mean that there is no damage to the building or structure.

(2) **RESTRICTED USE** is to be posted on each building or structure that has been damaged wherein the damage has resulted in some form of restriction to the continued occupancy. The individual who posts this placard will note in general terms the type of damage encountered and will clearly and concisely note the restrictions on continued occupancy.

(3) **UNSAFE - Do Not Enter or Occupy** is to be posted on each building or structure that has been damaged such that continued occupancy poses a threat to life safety. Buildings or structures posted with this placard shall not be entered under any circumstance except as authorized in writing by the Building Official, or his or her authorized representative. Safety assessment teams shall be authorized to enter these buildings at any time. This placard is not to be

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used or considered as a demolition order. The individual who posts this placard will note in general terms the type of damage encountered.

(b) This ordinance number, the name of the jurisdiction, its address, and phone number shall be permanently affixed to each placard.

(c) Once it has been attached to a building or structure, a placard is not to be removed, altered or covered until done so by an authorized representative of the Building Official. It shall be unlawful for any person, firm or corporation to alter, remove, cover or deface a placard unless authorized pursuant to this section.

.

INSPECTED

LAWFUL OCCUPANCY PERMITTED

This structure has been inspected (as indicated below) and no apparent structural hazard has been found.

☐ **Inspected Exterior Only**

☐ **Inspected Exterior and Interior**

Report any unsafe condition to local authorities; reinspection may be required.

Inspector comments:

_____

_____

_____

Facility Name and Address:

_____

_____

Date: _____

Time: _____

(**Caution:** Aftershocks since inspection may increase damage and risk)

This facility was inspected under emergency conditions by:

Jurisdiction
Address
Telephone

Inspector ID/Agency:

_____

_____

Do Not Remove, Alter or Cover this Placard until Authorized by the Building Official (Municipal Code Section XXX)

RESTRICTED USE

Caution: This structure has been inspected and found to be damaged as described below:

_____
_____
_____
_____

Entry, occupancy and lawful use are restricted as indicated below:

_____
_____
_____
_____

Facility Name and Address:

_____

_____

Date: _____

Time: _____

(Caution: Aftershocks since inspection may increase damage and risk.)

This facility was inspected under emergency conditions by:

Jurisdiction
Address
Telephone Number

Inspector ID/Agency

_____

Do not Remove, Alter or Cover this Placard until Authorized by the Building Official (Municipal Code Section XXX)

UNSAFE

DO NOT ENTER OR OCCUPY

(THIS PLACARD IS NOT A DEMOLITION ORDER)

This structure has been inspected, found to be seriously damaged and is unsafe to occupy, as described below:

_____

_____

_____

_____ **Do not enter, except as specifically authorized in writing by jurisdiction. Entry may result in death or injury.**

Facility Name and Address:

_____

_____

Date: _____

Time: _____

This facility was inspected under emergency conditions by:

Jurisdiction

Address

Telephone Number

Inspector ID/Agency _____

_____

Do Not Remove, Alter or Cover this Placard
until Authorized by the Building Official
(Municipal Code Section XXX)